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THE HISTORY OF OPIUM AND SOME OF ITS PREPARATIONS AND ALKALOIDS *

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BALTIMORE

If the entire materia medica at our disposal were limited to the choice and use of only one drug, I am sure that a great many, if not the majority, of us would choose opium; and I am convinced that if we were to select, say half a dozen of the most important drugs in the Pharmacopeia, we should all place opium in the first rank. If we were to inquire, however, into how much the great majority of the medical men know about the history of this wonderful product of plant life, which, when judiciously employed, has proved such a boon to suffering humanity, if we were to ask about the origin of some of our most familiar remedies—laudanum or paregoric, for instance—I fear the information gleaned would be meager. It is doubtful whether it is even generally known that opium, so widely used in China, is not indigenous to that country, but was introduced there at a comparatively late date. This were apology enough for a brief historical sketch on the subject, but a glance at the history of opium and its derivatives from the earliest time to the present may teach us more. If the aim of the history of medicine is not altogether the recitation of interesting anecdotes, but rather to trace the progressive development of our noble art and science, then is the history of no other drug more calculated and better fitted to illustrate the gradual transition from the obscurity and mysticism of the ancient *Dreck-Apotheke* or polypharmacy and kakopharmacy to the rational therapeutics of the present day.[1]

EARLY HISTORY

The medicinal properties of poppy juice date from a remote period, and yet not so far back in antiquity as we might expect, for the earliest definite and authentic references to it are found only in the Greek and Latin literatures. Of course, recalling the mystic rites and highly developed culture of the ancient Egyptians one is inclined to imagine that the narcotic properties of opium were known to them; but the investigations of Unger (1857) have failed to trace any acquaintance with opium in Ancient Egypt, and Dr. Ember, of the Semitic Department of this university, tells me he knows of no reference to it in Egyptian literature. According to some Hebrew scholars, there is a reference to poppy juice in the Bible. In several passages in the Old Testament the word *rôsh* is mentioned in connection with the word *la'anah*, wormwood or absinthe (Jer. viii 14, ix 14, etc.). *Rôsh* in these passages is in the authorized version rendered hemlock. *Rôsh*, however, in Hebrew is the word for "head," and so it has been taken by later scholars to mean poppy-head, and *me-rôsh*, or the juice of *rôsh*, rendered by Jewish interpreters as "poison water," is taken to mean the juice of the poppy. This interpretation fits well enough in the context, and further support is given it by the fact that the Latin for poppy-heads is *caputa*. Professor Haupt is convinced that *rôsh* means the poppy, and so also is Professor Post, who is considered an authority on the flora of Palestine. In the Talmud we have one reference to opium, under the name *ophion* (Jerusalemic Talmud, Tr. Abodah Zarah, 40a), but that word was clearly borrowed from Greek.

In regard to Sanskrit, Prof. M. Bloomfield of the Sanskrit department of this university tells me that opium is not at home in India, and so in the classical Hindoo literature (Brahmanical, Buddhist, Jinist) there is found no reference to it. From the time of the Mogul Conquest on there appears a word *Khash-khash* which means poppy-seed, and *Khash-khasha-rasa*, juice of the poppy. In this it is easy to recognize our modern word *hashish;* and so it seems that at that early date the narcotics opium and cannabis indica were confused with each other.

In modern Sanskrit lexicons there are found the names *aphena* and *ahi-phena* appiled to opium; *aphena* strictly means "foam," and *ahi-phena*, "serpent's foam." As these words for opium do not occur in any literary document, Dr. Bloomfield suspects that they are the English opium "sophisticated by what is known as popular etymology."

The original home of the poppy was in Asia Minor. From there it was carried to Greece at a later period.

The name opium is derived from the Greek ὀπός or "juice." From this word were later formed the Hebrew *ophion* already mentioned, and more particularly the Arabic *af-yun*, which has found its way into other Asiatic languages. The Chinese name for the drug *o-fu-yung* (and its modifications *ya-pien* and *opien*) are not of native origin, but are all derived from the Arabic.

* This sketch is intended to be an introduction to a pharmacologic study of some opium alkaloids carried on by the author and endorsed by a grant from the Council on Pharmacy of the American Medical Association.

1. In the preparation of this manuscript the following authorities have been frequently consulted:

Geissler and Möller: Real Encyclopedie der Gesammten Pharmacie, Leipzig, 1886-1891.

Flückiger and Hanbury: Pharmacographia or History of Drugs, 1874.

Rice: New Remedies, 1876, p. 229.

Jones, John: The Mysteries of Opium Revealed, London, 1701.

Guareschi: Einführung in das Studium der Alkoloide, Berlin, 1896.

Thompson, C. J. S.: The Mystery and Romance of Alchemy and Pharmacy, 1892.

Jeffreys and Maxwell: Diseases of China, 1906.

It is not at all certain whether Hippocrates was acquainted with the juice of the poppy. According to Wootton, he refers to a substance called *mecon* to which he attributes a purgative as well as narcotic action. Some think that it was opium; others believe that he was referring to another plant. In any case, he made but very little use of the drug.

The first authentic reference to the milky juice of the poppy we find by Theophrastus at the beginning of the third century B. C., when he speaks of it as μηκώνιον (meconion).

Scribonius Largus,[2] in his "Compositiones Medicamentorum," about the year 40 of the present era, describes the method of procuring opium from the capsules of the poppy, and about the year 77 of the same century Dioscorides makes a distinction between the juice of the capsules which he called ὀπός and the extract of the whole plant or μηκώνιον, which he regarded as less active. He describes the method of incising the capsules, and refers to adulterations of the drug with the milky juices of other plants such as Lactuca, so that from his statements it is evident that the collection of opium was quite an industry in Asia Minor at that time. He also describes the preparation of a syrup of poppies or *dia-kodion*, which is the original of the syrup of poppies of the German and other Pharmacopeias to this day.

Pliny devotes some space to a description of opium and its medicinal use, and the drug is mentioned repeatedly as *lacrima papaveris* by Celsus in the first century and by numerous other Latin writers. Galen spoke enthusiastically of the virtues of opium confections, and the drug was soon so popular in Rome that it fell into the hands of shopkeepers and itinerant quacks.

The introduction of the drug to the natives of the East was through the Arabs, and in the first instance to Persia. Its introduction into India seems to have been connected with the spread of Mohammedanism and was favored by the Mohammedan prohibition of wine.

The Arabic physicians used opium very extensively, and even wrote special treatises on some of its preparations. The most celebrated of them, Abu-l-ali-ibn-Sina, more commonly known as Avicenna (980-1037), recommended it especially in diarrhea and diseases of the eye. Avicenna himself is said to have met death from an overdose of the drug. Serapio (about 1090) used it freely, and Maimonides and Averroes each wrote a treatise concerning the theriac, of which I shall have much more to say a little later.

The earliest mention of opium as a product of India is by the traveler Barbosa, in his description of the Malabar coast in 1511. A Portuguese historian, Pyres, in a letter to Manuel, King of Portugal, in 1516, speaks of the opium of Egypt and Bengal. It is from Egyptian Thebes that we have the terms "opium thebaicum" and the alkaloid thebain.

Opium is supposed to have been brought to China first by the Arabs, who are known to have traded with the southern parts of the empire as early as the ninth century. Later the Chinese began to import the drug in their junks from India. At that time it was used by them exclusively as a remedy for dysentery. It was not before the second half of the eighteenth century that the importation of opium began to increase rapidly through the hands of the Portuguese, and a little later through the famous East India Company. In 1870 the English established an opium depot in Lark's Bay, south of Macao, and the traffic rapidly increased, so that very soon the Chinese authorities began to complain, and in 1820 an edict was issued forbidding any vessel having opium on board to enter the Canton River. A system of contraband followed, then political friction between England and China, and the so-called Opium War, which culminated in the Treaty of Nanking (1842) by which five ports of China were opened to foreign trade, and in 1858 opium was admitted as a legal article of commerce. By that time the vice of opium-smoking had spread like a plague over the gigantic empire, and became so deeply rooted that, in spite of innumerable edicts and decrees, all efforts to check its growth have been powerless. A poor sort of missionary work by the enlightened West among the heathen Orientals!

I shall not spend here any more time in tracing the history of opium in China, or in dwelling on the horrors of the opium habit, with its frightful constipation and even more terrible diarrhea, and the physical and mental degeneracy to which it leads. Our object is rather to follow the use of opiates therapeutically, and in Europe.

Since the time of Galen, the use of opium was continued in a disguised form in various concoctions and confections containing so many ingredients that the distinction between the important and useless could not be discovered, and the value of the drug was overlooked, except by a few brighter minds.

The famous physician of the middle ages, Philippus Aureolus Theophrastus Bombast von Hohenheim, commonly known as Paracelsus (1490-1540), owed much of his success to the bold way in which he administered opium to his patients. He is said to have carried opium in the pommel of his saddle and called it the "stone of immortality." His followers were as enthusiastic as himself over the virtue of opium. Platerus of Basle in 1600 strongly recommended it, and Sylvius de la Boe, a famous Dutch physician, declared that without opium he could not practice. The celebrated chemist and physician Van Helmont, about 1640, used it so frequently that he was called Doctor Opiatus, and Sydenham about 1680 writes that "among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium."

THE FOUR OFFICINAL CAPITALS

No better illustration of the widely beneficent properties of opium and at the same time of the hopeless muddle of superstition, kakopharmacy and polypharmacy pervading the older materia medica and therapeutics, can be given than by a brief description of the four remedies which are sometimes known as the four officinal capitals, of which Wootton,[3] in his "Chronicles of Pharmacy," says, "There were writers who ventured to criticize some of the details of composition, or some of the uses made of these compounds, but the possibility of medicine existing without them was hardly contemplated previous to the eighteenth century." These four standbys or panaceas were the *mithridatium*, *theriaca*, *philonium*, and *diascordium*.

Mithridatium was a confection which derived its name from Mithridates VI or the Great, king of

2. Largus, Scribonius: De Compositione Medicamentorum, 1786.

3. Wootton: Chronicles of Pharmacy, 1910.

Pontus in Asia Minor, born about the year 134 B. C., who was one of the most troublesome foes the Roman Republic had to deal with. He was finally defeated by Pompey. This personage is said to have been a student of poisons, and was accredited with having invented or concocted an alexipharmac or antidote as a protection against them, which was named mithridatium after him. The legend goes to say that when conquered by the Romans, to escape capture he poisoned his wife and daughters and then took poison himself; but according to the story he had so successfully immunized his body to all sorts of poisons that his efforts at suicide proved unsuccessful and he had to call on one of his soldiers to dispatch him. Hence the origin of the term "mithridatism" or immunization against the effects of a poison through gradual administration of small doses of it. As the king of Pontus was accredited with having possessed especial skill in the production of medicines, his conquerer, Pompey, took care to ransack his medical writings and secure whatever he could. Thus, whether from Mithridates or not, a panacea bearing his name found its way into Roman literature and became very popular. Various modifications of it were later made, the most important of which was the so-called theriaca.

Theriaca was invented by Andromachus, the physician of Emperor Nero, and was devised as an improvement on mithridatium, which until then was the great antidote of Roman pharmacy. The most important difference between the two was the addition of vipers. The word "theriaca' comes from the Greek θηρίον, wild beast, or serpent, and has reference to its use as an antidote against snake bites. According to Galen, the virtues of this panacea were the following:

It resists poison and venomous bites, cures inveterate headache, vertigo, deafness, epilepsy, apoplexy, dimness of sight, loss of voice, asthma, coughs of all kinds, spitting of blood, tightness of breath, colic, the iliac poison, jaundice, hardness of the spleen, stone, urinary complaints, fevers, dropsies, leprosies, the troubles to which women are subject, melancholy and all pestilences.

Though all this may seem a huge joke, all these virtues were accepted down to the seventeenth century, and many learned treatises were written on the subject. For some centuries various cities such as Constantinople, Cairo, Genoa and Venice gained the enviable reputation of manufacturing the most efficient theriaca. Later Venice overshawdowed them all; and the Venice theriaca, or as the word became corrupted, Venice *treacle*, was for a long time famous, and is found in the London Pharmacopeia as late as 1745. Our present word "treacle" is derived from this confection; in earlier English works, however, treacle signified much more than molasses, and was used metaphorically for the divinest blessings.

I am now going to quote the ingredients of theriaca, as given by Galen, first to illustrate the curious conglomeration of an enormous number of useless drugs, and secondly to point to the presence in it of opium, to which probably a great part of its virtues were due. The ingredients of this, as well as of mithridatium, were given in Greek verse, in order that they might be better remembered.

ELECTUARIUM THERIACALE MAGNUM

Root of Florentine iris, licorice, 12 ounces each; of Arabian costus, Pontic rhubarb, cinquefoil, 6 ounces each; of Ligusticum meum, rhubarb, gentian, 4 ounces each; of birthwort, 2 ounces; herb of scordium, 12 ounces; of lemon grass, horehound, dittany of Crete, calamint, 6 ounces each; of pennyroyal, ground pine, germander, 4 ounces each; leaves of laurus cassia, 4 ounces; flowers of red roses, 12 ounces; of lavender, 6 ounces; of St. John's wort, 4 ounces; of lesser centaury, 2 ounces; saffron, 2 ounces; fruit of amyris opobalsamum, 4 ounces; cinnamon, 12 ounces; cassia lignea and spikenard, 6 ounces each; Celtic nard, 4 ounces; long pepper, 24 ounces; black pepper and ginger, 6 ounces each; cardamoms, 4 ounces; rape seeds, agaric, 12 ounces each; seeds of Macedonian parsley, 6 ounces; of anise, fennel, cress, seseli, thlaspi, amomum, sandwort, 4 ounces each; of carrot, 2 ounces; *opium*, 24 ounces; opobalsamum, 12 ounces; myrrh, olibanum, turpentine, 6 ounces each; storax, gum arabic, sagapenum, 4 ounces each; asphaltum, opoponax, galbanum, 2 ounces each; juice of acacia and of hypocist, 4 ounces each; castor, 2 ounces; Lemnian bole, calcined vitriol, 4 ounces each; trochises of squill, 48 ounces; of vipers, of sweet flag, 24 ounces each.

Triturate the balsams, resins and gums in a sufficient quantity of wine to form a thin paste, and incorporate the whole with 960 ounces of honey.

Philonium was another famous antidote, invented by Philon of Tarsus, who is supposed to have lived in the early part of the first century of the present era. It is conjectured from an obscure passage in Pliny that this antidote was prescribed against an epidemic of colic or dysentery which occurred in Rome in Philon's time.* Philonium was the original of the confection of opium which remained in the English pharmacopeias until 1867. In the Pharmacopeia Londinensis of 1746, the ingredients of philonium are given as follows: white pepper, ginger, caraway seeds, strained opium and syrup of poppies, the proportion of opium being 1 grain in 36 grains of the confection.

Diascordium, the last of the four officinal capitals, was a medicinal compilation by Hieronymus Frascatorius, a famous physician and poet of Verona in the early part of the sixteenth century, and is given in his book "De Contagio et Morbis Contagiosis." It was originally devised as a preventive of the plague. In the eighteenth century it became a popular household opiate and was frequently given to children for soothing purposes. The original formula, which was adopted in the first London Pharmacopeia in its integrity, mentioned among its principal ingredients cinnamon, cassia wood, scordium, dittany, galbanum, storax, gum arabic, *opium*, sorrel, gentian, Armenian bole, Lemnian earth, pepper, ginger, and honey. Later some of the ingredients were dropped, and the Edinburgh Pharmacopeia made it more astringent by adding catechu and kino. The mangled remains of this famous panacea are represented by the British and U. S. P. Pulvis Catechu Compositus, and Pulvis Kino Compositus.

LATER USES OF OPIUM

The compound powders of catechu and kino just mentioned are not the only relics of ancient opium compounds remaining in the British and our own pharmacopeias. The commonest pharmaceutic preparations of opium still in use are of antique extraction, and it may be of interest to devote a few words to them at this place.

Our tincture of opium or laudanum dates from Paracelsus (1490-1541). Paracelsus probably applied the name "laudanum" to several medicines, all of which contained opium. Thus one historian describes a *pill mass* which he designates as laudanum of Paracelsus, and which consisted of one-fourth of its weight opium, to which were added henbane juice, mummy,

salts of pearls and corals, bone of the heart of a stag, bezoar stone, amber, musk, and essential oils.

Another laudanum, known as anodynum specificum of Paracelsus, was obtained by digesting opium, with orange and lemon juice, frog's sperm water, cinnamon, cloves, ambergris, and saffron. So much for the more ancient laudanum. The laudanum of the early London pharmacopeias was a pill mass, made of a mixture of opium, wine, saffron, castorum, diambrae, ambergris, musk, and oil of nutmeg. The principal liquid preparation of opium used in England a little later was the so-called Sydenham's laudanum. The formula was given by Sydenham in his work on dysentery in 1669-1672, and called for the following ingredients: strained opium, saffron, cinnamon, clover, and canary wine. About the same time, that is, at the end of the seventeenth century, another preparation known as Rousseau's laudanum was much in vogue on the Continent. This differed from the other laudanum in being a fermented compound, and was named after a Capuchin monk by the name of Rousseau. This holy man was sent from Rome to Paris to learn medicine preparatory to mission work in Asia, but became enamored with the subject and settled in Paris to practice the art of healing. He became a favorite with Colbert, the minister of Louis XIV; rooms and laboratory were provided for him in the Louvre, and Louis ordered the Faculty of Medicine to give him a degree.

The name "laudanum," attributed to Paracelsus, is supposed to be derived from the Latin *"laudandum,"* "something to be praised." According to some philologists it is related to gum labdanum or ladanum, from which a stomachic cordial was prepared in the middle ages. Others regard it as an abbreviation of the two words *laudatum opium*. Still others endeavor to find in it a corruption of the word *anodynum* with the article prefix, that is, *l'anodynum*, or *the* anodyne, and some latter-day punsters humorously refer to it in bad Latin *Lauda non!* "do not praise," which conveys more truth than poetry.

In the early part of the eighteenth century another celebrated opiate was the so-called "black-drop." Its inventor was one Edward Runstall of Auckland, and it was also known as Lancaster or Quaker's black drop. A formula for its preparation was as follows: Opium ½ pound; verjuice, 4 pints; nutmegs, 1½ ounces; saffron, ½ ounce. Boil, add two spoonfuls of yeast and set in a warm place for six to eight weeks; then decant, filter and put in bottles. This preparation was three times as strong as laudanum, and is the forebear of the English Acetum Opii.

Our other familiar friend and popular household anodyne, paregoric, originated with the elixir asthmaticum of Le Mort, professor of chemistry at the University of Leyden from 1702 to 1718. A modification of Le Mort's formula given in the London Pharmacopeia of 1721 was as follows: honey and licorice root, of each, 4 ounces; flowers of benjamin and opium, of each, 1 dram; camphor, 2 scruples; oil of aniseed, ½ dram; salt of tartar, 1 ounce; spirit of wine, 2 pounds. In the London Pharmacopeia of 1746, the name of it was changed to Elixir Paregoricum. In that of 1888 the official name became Tinctura Opii Camphorata. This preparation was also known as Tinctura Camphorae Co., and in the German Pharmacopeia as Tinctura Opii Benzoica. The word "paregoric" comes from the Greek παρηγορικός, which means "soothing" or "consoling."

Our official opium pills, or Pilulae Opii, are not a modern product but are descended from the old English Pilulae Soponis Co., or Pilulae Soponaceae, which in their turn are an adaptation of the long famous nostrum known as Matthew's Pills or Starkey's Pills. Starkey was a physician who invented them, and Matthew was a vender who sold them. The pills consisted of opium, soap of tartar, and a number of other trivial ingredients.

No account of the history of our opiates can be said to be complete without a reference to Dover's powder, and its originator, the adventurer and knight errant of English medicine, Thomas Dover. I shall not dwell long on the life of this interesting individual, especially as an account of him by Osler[4] has already been published. Born at Barton on the Heath in Warwickshire in 1660, he studied medicine, and in his youth lived at the house of the famous Thomas Sydenham. Many have probably read of how he later joined a privateering party, and led a life of adventure, roaming around the world; how the ship in which he was sailing rescued Alexander Selkirk, the man who lived alone on an island for over four years and who became the prototype of the famous Robinson Crusoe. When he returned to London and settled down to practice, Dover[5] wrote his "Ancient Physician's Legacy to his Country." In this work, in the chapter on gout, he gives the recipe for his "diaphoretic powder" in the following words:

> Take opium, 1 ounce; saltpeter and tartar vitriolated, each 4 ounces; liquorice, 1 ounce; ipecacuanha, 1 ounce. Put the saltpeter and tartar into a red hot mortar, stirring till they have done flaming. Then powder very fine. After that, slice in your opium; grind to a powder and mix. Dose, from 40 to 60 or 70 grains in a glass of white wine posset, going to bed, covering up warm, and drinking a quart or three pints of the posset while sweating. In two or three hours at furthest the patient will be free from pain.

This will suffice for the commoner opium preparations.

THE ALKALOIDS

Let us now turn from this region of pharmaceutic romance, superstition and mysticism, to some of the achievements that characterize the pharmacy of the nineteenth century, and which mark the beginning of rational therapeutics.

As is well known, throughout the middle ages it was the great ideal of all chemists, or rather alchemists and pharmacists, to search after essences, or quintessences of things, after the philosopher's stone, the elixir of life, etc., and it is natural to find that of all popular drugs opium should be the one especially tortured to give up its essence. Therefore the various laudanums and extracts of opium, and preparations known as magisteria opii, were products of activity exerted in that direction.

Toward the end of the eighteenth century it was a universal belief that plants could elaborate products of only an acid or neutral nature, and that alkalies were substances of a very different character, related more to the metals and exhibiting metallic properties. It was not until the beginning of the nineteenth century, with the discovery of the alkaloids, that this conception was shattered, and it is significant that the first alkaloid to be discovered was the chief active princi-

4. Osler, W.: Bull. Johns Hopkins Hosp., 1896, vii, 1.
5. Dover, Thomas, M. B.: The Ancient Physician's Legacy to His Country, London, 1762.

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ple of opium—morphin. The honor of this epoch-making discovery belongs to a German, Friedrich Wilhelm Adam Sertürner. Sertürner was born July 19, 1783, in Paderborn. He became an apothecary and chemist at Einbeck in Hanover, Germany, where he did his most important work, and moved later to Hameln, where he died, Feb. 20, 1841.

Sertürner began his investigations of opium in 1803, and published the first report of his studies in 1805, when he announced his discovery in opium of an acid, *Opium-Saüre,* which he later named "meconic acid," and which he explained was combined with an alkaline base which he called morphium. In a second communication, in 1816, he gave a detailed account of his work, and described the chemical as well as the pharmacologic properties of morphin, which he tested out on himself, and came near losing his life.

"I flatter myself," he wrote, "that chemists and physicians will find that my observations have explained to a considerable extent the constitution of opium, and that I have enriched chemistry with a new acid (meconic) and with a new alkaline base (morphium), a remarkable substance which shows much analogy with ammonia." Sertürner's discovery excited so much interest, and its importance was regarded as so great, that in 1831 the Institute of France awarded to him a prize of 2,000 francs "for having opened the way to important medical discoveries."

Next in importance to morphin in point of quantity, the opium alkaloid narcotin was discovered really before morphin, in 1803, by the French pharmacist Derosne, who obtained crystals of what proved to be narcotin while diluting a sirupy aqueous extract of opium. These crystals became known as *sel d'opium* of Derosne. The basic or alkaloidal character of the body, however, was not established until 1817 by Robiquet, another pioneer in alkaloidal chemistry. The same Robiquet was the discoverer of the next very important opium alkaloid named codein, in 1832. The discoverer of the next opium alkaloid was another illustrious chemist, Joseph Pelletier, whose name is familiar to us from the active principle of male fern, pelletierin. Pelletier was born in Paris in 1788, and died there in 1842. A son of an apothecary, he was from his earliest days engaged in chemical and pharmaceutic studies, and later became a director of the school of pharmacy in Paris. He was the first to isolate a large number of alkaloids. In 1832 he discovered the opium alkaloids narcein and oxymorphin, and in 1835, with Thibouméry, another alkaloid, thebain. Pelletier was also the discoverer of strychnin, and together with Caventou, of brucin, quinin, and chinchonin, together with Magendie of the at present interesting emetin, together with Corriol of aricin, together with Thibouméry of pseudomorphin, together with Couerbe of picrotoxin, and together with Pelleton of berberin. Since his time opium has become a nidus for a large number of alkaloids, and promises to yield a few more. Up to the present, according to Winterstein and Trier,[6] opium has yielded besides protein bodies, sugar, gum, resin, salts, and organic acids, twenty-two different alkaloids of which the following is a list: morphin by Sertürner in 1804; narcotin by Robiquet in 1817; codein by Robiquet and narcein by Pelletier in 1832; thebain and pseudomorphin by Pelletier and Thibouméry in 1835; papaverin by Merck in 1848; cryptopin in 1857; gnoscopin in 1878 and xanthalin in 1893 by T. and H. Smith; codamin, laudanin, meconidin, and lanthopin by Hesse in 1870; laudanosin and hydrocotarnin in 1871, and protopin in 1872 also by the same investigator; oxynarcotin, by Beckett and Wright in 1875; tritopin by Kander in 1890; laudanidin by Hesse in 1894, and lastly pseudopapaverin and papaveramin by the same man in 1903.

Besides the primary opium alkaloids, a large number of derivatives of them have been made, which we need not enumerate here. Let me but mention apomorphin, apocodein, heroin, dionin, and peronin.

All these chemical individuals have been analyzed, their empiric formulas established, and an attempt, at least in case of some of them, has been more or less successfully made to determine their structure. Along with this chemical work, which forms one of the most brilliant chapters of modern chemistry, a great deal, though by no means complete or sufficient, physiologic and pharmacologic work has been done with them.

Only within the last few years, the work of Straub, Faust, Bürgi, Sahli and others has marked a still further step in our knowledge of their therapeutic properties. These authors have shown that not only have the various opium alkaloids individually definite pharmacologic actions, but that also still other effects can be produced by combining them with each other.

Thus if we trace the history of opium from its earliest beginnings to the brilliant researches of recent years, if we but compare the analytic and synthetic, chemical, physiologic and pharmacologic studies of the same old drug with the fantastic and puerile effusions on the subject of our medical predecessors, we cannot help being impressed with the long strides forward which medicine has made; yet, on the other hand, our very recent studies on opium and its alkaloids serve but to emphasize the more our meager knowledge of the subject and the still greater task before us.

As I close, I must recall the pregnant words of the philosopher: "And I saw indeed that wisdom hath the advantage over folly, as great as the advantage of light over darkness." "The wise man hath his eyes in his head, while the fool walketh in darkness"; but (and that is what we should all remember) "I myself perceived then also that the same occurrence may befall all of them." (Ecclesiastes ii: 13, 14).

6. Winterstein and Trier: Die Alkoloide, Berlin, 1910.

One-Minute Biographs.—The subject of to-day's sketch is claimed equally by chemistry, biology, medicine, industry, agriculture and economics, and all are deeply indebted to him for substantial scientific contributions. Chemistry is his debtor for throwing a flood of light on the nature of isomerism, and thereby laying a secure foundation for our present conceptions of structural chemistry. Biology is his debtor for effectively disposing of the theory of spontaneous generation and for demonstrating fermentation as a vital phenomenon. Medicine is his debtor for establishing the relation of bacteria to disease, and for fundamental contributions to the science and practice of immunity. Agriculture is his debtor for his brilliant work in devising a protective vaccine against anthrax, a dread scourge of cattle and sheep. Industry is his debtor for epoch-making discoveries in fermentation which provided a sorely needed scientific foundation for the wine industry, and for his work in discovering the cause of the silkworm blight whose control saved the silk industry in France from destruction. Economics is his debtor for the knowledge which made possible the introduction of canned foods, a step which has wrought profound economic changes throughout the world. With all the world so largely his debtor, let us revere the name of Louis Pasteur, benefactor of mankind.—*Weekly Bull. Dept. Health,* New York City.

A NEW OPERATIVE TREATMENT FOR SELECTED CASES OF CEREBRAL SPASTIC PARALYSIS *

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This paper is merely the report of the operative treatment of sixty-five cases of spastic paralysis showing intracranial pressure by an ophthalmoscopic examination. These sixty-five operated cases are the ones selected as being suitable for the operation from the examination of 201 cases of spastic paralysis, that is, one in about every three cases examined. Although only a little more than a year has elapsed since the first operation, which was performed in June, 1913, yet our results have been so gratifying and even startling, that we feel justified in presenting the progress of the cases treated by us up to the present time. Naturally, sufficient time has not yet elapsed to permit us to say whether the improvement in our cases will be a permanent one or not; and yet, in view of the pathologic lesions producing this type of spastic paralysis, we do not see why the improvement should not become more and more marked as the children grow older.

Let us emphasize first, that we are *not* operating on the mentally deficient, the constitutionally inferior and idiots in the hope of restoring them to a normal mentality; and secondly, that we are not operating on microcephalic children in the belief that the brain will develop and become normal by enlarging their cranial capacity (a belief long exploded); and thirdly that we are not operating in cases of spastic paralysis due to a lack of development and malformation of the cortex of the brain and the pyramidal tracts—cases forming at least one-half of the total number of spastic paralyses—the so-called Little's disease, in which a cranial operation will do no good, and from the very pathology of which a cranial operation can be of no benefit to the patient. On the other hand, we *are* operating in those cases of spastic paralysis giving a history of difficult labor with or without instruments, in which on opththalmoscopic examination the definite signs of increased intracranial pressure are to be seen on the fundus of the eye; that is, only those cases of spastic paralysis which show definite signs of increased intracranial pressure, whether this condition is associated with impaired mentality (and it very frequently is as the result of prolonged pressure on the cortex of the brain) or whether the size of the head is unusually small or unusually large. If in the latter cases there is an increased intracranial pressure, then that pressure should be relieved in the hope that the spasticity will lessen and the mentality be improved. Naturally, the most satisfactory and desirable cases for operation are the ones with slight impairment of the mentality, but these cases are rare when the intracranial pressure has been present for several years; much more commonly do we find a more normal mentality in those cases of lack of development and malformation of the pyramidal tracts, unless very extensive.

The condition of spastic paralysis results most frequently from a lesion of the brain occurring before birth, during birth or shortly after birth. It is characterized by more or less complete paralysis of the part affected, and is associated with a stiffness or spasticity depending on the extent of the involvement of the pyramidal tract; this hypertonicity produces muscular contractures and deformities, usually flexor in type, with a corresponding overstretching of the opposing muscular groups, usually the extensors. In mild cases, however, the spasticity may be so slight as to cause little or no deformity, but merely an awkwardness of the part affected. Frequently, athetoid movements of the arms and legs may be observed, and epileptiform attacks, commonly of the jacksonian type, may occur.

As the child grows older, not only do the spasticity and its resulting contractures increase in a large percentage of cases, but also the mentality of the child becomes impaired, and this impairment continues until the child may be considered a defective, or still further an imbecile, and only too frequently an idiot.

Little, if anything, has been done to improve permanently the condition of spastic paralysis, and we offer our observations in the hope that they may lead to a more satisfactory solution of the treatment of these cases. Our attention was first centered on the importance of relieving the increased intracranial pressure as a means of lessening the spasticity and improving the mentality of these children, by a decompression operation performed by one of us at the Nassau Hospital, Garden City, Long Island.

The case, referred by Dr. L. B. Rogers, was one of a child, aged 9 years, who after an easy delivery was apparently normal in every way until the ninth month of age, when it suddenly had a series of epileptic attacks; after these attacks had subsided, it was observed that there was a total left hemiplegia with exaggerated reflexes; the left arm and left leg became spastic and gradually assumed the flexor contractures so typical of these spastic cases. Three years ago, the patient had another series of convulsions and since that time these convulsive seizures of greater and lesser severity have continued almost daily. The mental impairment was moderate. Every method of treatment had practically been given up as useless. Last June, another series of convulsions began and during the four days preceding the examination of the patient, 302 attacks had occurred; the child was in a condition of status epilepticus—one convulsion following another; the almost continuous administration of chloroform was of little value. In addition to the typical left spastic hemiplegia, the patient had at this examination double choked disks, as revealed by an ophthalmoscopic examination—that is, a high intracranial pressure; the pulse was 54 and the respiration was very irregular and of the Cheyne-Stokes type. As artificial respiration and oxygen were being used, a right subtemporal decompression was advised in the hope that a relief of the increased intracranial pressure might improve the condition of the patient. The operation was performed at the Nassau Hospital, Garden City, June 18, 1913. No anesthetic was necessary—the patient being unconscious. On incising the dura, which was exceed-

* Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

* The preliminary report of this work appeared in THE JOURNAL Nov. 29, 1913, p. 1982; at that time, the operation had been performed in only twelve cases.

ingly tense, the cerebrospinal fluid spurted to a height of 6 inches; the cortex was edematous and swollen, and on enlargement of the opening upward, a fibrous mass, apparently the residue of an old cortical hemorrhage, was exposed, lying on the cortex and extending upward beneath the margin of the decompression opening. As the condition of the child was bad, I decided to remove the mass at a later operation. Owing to the mere relief of the intracranial pressure, the child became conscious at the end of the operation and an uneventful recovery occurred, the child leaving the hospital on the eleventh day after operation. The striking feature of the case, however, was the gradual lessening of the spasticity and of the contractures of the face, arm and leg, and this improvement continued until the child began using the leg freely and the left arm and hand for picking up articles for the first time in its life; there was also a definite mental improvement. The improvement in this case has been continuous.

The thought then occurred, "Why not do a decompression operation in those selected cases of spastic paralysis having a possible hemorrhage on the brain and showing any signs of intracranial pressure?" And so we began having the eyes of spastic children examined carefully with an ophthalmoscope for signs of increased intracranial pressure. It was very surprising to ascertain that of the cases examined, a large number did show mild though distinct signs of intracranial pressure—that is, a dilatation of the retinal veins, and a hazy edematous blurring of the nasal margins of the optic disks; many of them showed even mild signs of old secondary optic atrophy—rather whitish disks and the physiologic cup shallow from scar tissue formation. We then began to select for operation such cases having these definite signs of increased intracranial pressure, especially the extreme cases and the ones which had received the usual treatment of tenotomies, tendon lengthenings, alcohol injections, braces, massage, etc. Since then, we have operated in 65 cases, most of them being of the extreme type, and the results have been very gratifying. Of these 65 cases 34 were diplegics, both arms and legs being affected; 11 were paraplegic, only the legs being involved, while the remaining 20 cases were hemiplegic—the leg usually being more affected than the arm of the one side. Epilepsy in its various forms was present in 26 of these 65 cases; the improvement in 7 of these 26 epileptic patients has been complicated because the epilepsy has continued but in a less severe degree.

Six of our patients operated on have died and each of them within ten hours after the operation; four of these were under 2 years of age, of the extreme diplegic type, emaciated and therefore very poor operative risks; it seems that in them any alteration of the high intracranial pressure and circulation was sufficient to upset the patient—the temperature rising to 108 degrees within two hours after the operation; possibly, a too rapid escape of the cerebrospinal fluid interfered with the circulation of the basal ganglia and therefore the high temperature resulted. We are now controlling this loss of cerebrospinal fluid by elevating the head and shoulders of the patient according to the rate of flow and with much better results; it is an interesting observation that the temperature in these cases can be either raised or lowered by elevating or lowering respectively the head and shoulders.

Not only has there been a lessening of the spasticity of the arms and legs affected in these cases selected for operation, but there has been a definite amelioration of the mental condition of the patient to such a degree that we obtain the cooperation of the child in the carrying out of the after-treatment—a very important advantage of this operation. Naturally, the younger the patient is at the time of operation, the better the prognosis; that is, the longer the general and local increased intracranial pressures have persisted, just so much more will the delicate nerve cells be compressed, their blood-supply interfered with and therefore the cells themselves impaired.

The ideal time for the operation would be immediately after birth; then, merely a small opening need be made to allow the subdural blood to flow out in liquid form with little or no resulting impairment of the cortex. However, it is extremely rare for a definite diagnosis to be made at this early date—the impairment usually not being ascertained until several months later when the child is from 9 to 12 months of age. It is to be hoped that routine ophthalmoscopic examinations of the fundi in suspected cases following difficult labor will be of great assistance.

METHOD OF PROCEDURE

In those cases of spastic paralysis of the hemiplegic, paraplegic or diplegic type, with a definite history of difficult labor with or without the use of instruments, in which, on ophthalmoscopic examination, signs of intracranial pressure are shown in the dilated retinal veins and a blurring and haziness of the optic disks, especially of their nasal halves, a large right subtemporal decompression is performed to relieve the intracranial pressure. If the intracranial pressure is extremely high and remains high after the operation, a left subtemporal decompression is performed the following week, the operative recovery requiring only a week or ten days.

The operation itself consists of a vertical incision over the side of the head from 2½ to 3 inches in length extending from the parietal crest down to a point overlying the zygomatic arch and just anterior to the external auditory meatus; that is, to the lowermost point of the cranial cavity. The fibers of the temporal muscle are separated longitudinally and then a small opening in the squamous bone, made by the Doyen perforator and burr, is enlarged by rongeurs to a diameter of from 2 to 3 inches. The dura is now incised in a stellate manner, allowing the brain to expand, and in this way the increased intracranial pressure is relieved. The dura is *not* resutured and the bone is not replaced.

The usual pathologic findings are definite supracortical fibrous or cystic formations resulting from a cortical hemorrhage occurring at birth. These pathologic lesions are treated according to the individual findings—removed, punctured, the interior touched with some mild corrosive to cause an obliteration (great care being taken that no excess of the corrosive fluid escapes over the cortex) and very frequently, merely let alone; that is, more damage to the cortical cells may be done by endeavoring to remove the lesion and therefore it is wiser not to attempt it. The decompression operation is performed merely to offset the effects of the pressure of this hemorrhage with cystic formation, and the resulting spasticity and mental impairment. In four cases, the hemorrhagic cyst was cortical and subcortical; naturally, the local nerve

cells and their fibers must have been damaged, so that a physical improvement cannot be expected in that part of the body controlled by the cells or fibers destroyed; however, the cells and fibers at the periphery of the lesion are merely impaired functionally by the local pressure of the cyst and the cystic formation, so that the functional impairment in these cases has improved very much.

The after-treatment, briefly, consists in the correction of deformities by tendon lengthenings if necessary, or merely stretchings of the contracted muscles, the maintenance of corrected positions through the employment of especially adapted braces, skilled massage and faradism, particular attention being given to the weakened and overstretched muscle groups. A careful, systematic course in muscle training is carried on daily.

The improvement in our cases selected for operation has been so marked—not only a lessening of the spasticity, but also a definite amelioration of the mental condition of the patient—that we believe a cranial decompression is indicated in those cases of spastic paralysis showing intracranial pressure by the ophthalmoscopic examination; of those cases of spastic paralysis which we have examined, about 40 per cent. have shown signs of intracranial pressure, and are, therefore, in our opinion, cases that can be very much improved; all of our operated cases had previously had the routine orthopedic treatment of massage, muscle training, tendon operations, etc., with little or no permanent improvement. The operation of cranial decompression is not a formidable procedure for one trained in neurologic surgery; all of our patients have improved (four only slightly), and we have had six deaths. The anesthetic should be administered by an expert; cyanosis and coughing are very dangerous complications, especially after the dura has been opened. Dr. C. S. Hunt used a mixture of ether and oxygen in all of our cases reported in this series, and in only two of them was any difficulty encountered; fortunately, the dura had not been opened. Dr. Hunt has observed the tendency of patients to become conscious as soon as the dura is incised and the intracranial pressure relieved; it is important to deepen the anesthesia, therefore, just before the dura is incised in order to prevent coughing, etc.

For lack of space, we report in this paper only every sixth case in which operation was performed, since the preliminary report in November, 1913, until May, 1914; the record of each case in detail will be published later.

CASE 12.—Erma, aged 26 months. Diagnosis: Left spastic hemiplegia. Right supracortical hemorrhagic cyst. Operations: First, right subtemporal decompression; second, left subtemporal decompression.

History.—Admitted to Stern's Private Hospital, Sept. 29, 1913. Referred by Dr. George E. Brewer. Family history negative. Four older children well and strong. Personal History: Fifth child; nine months' baby; difficult labor requiring the use of instruments. Patient remained "quiet" for three days, then began to have convulsive twitchings of head to the right, lasting from three to five minutes; then quiet, possibly for the entire night. Since then, irritable "spells," crying for five hours at a time. Paralysis and flexor contractures of the entire left side of the body, including the face. No convulsions since. Poor appetite; constipated with much mucus in stools. Has never attempted to walk or talk; apparently oblivious to its surroundings. Past Treatment: Massage, electricity and general hygiene. No improvement; spasticity and flexor contractures becoming worse.

Examination.—Typical left spastic hemiplegia of face, arm and leg. Leg flexed and adducted; fingers clenched, especially thumb. Right eye diverges slightly. Poorly nourished child with definite mental impairment. Fundi: Dilated retinal veins and blurring of nasal halves of optic disks, especially the left disk, which is distinctly pale. Reflexes all increased on left side; left Babinski. Unable to talk a word. Has never walked or attempted to walk or crawl. Wassermann test negative.

First Operation.—Oct 8, 1913. Right subtemporal decompression. Usual incision and bone removed; no complications. Dura very thick—⅛-inch—and under marked tension. Cerebrospinal fluid spurted half an inch—a large amount escaping. The pia-arachnoid adhered to the dura, and when the dura was widely incised, a large bluish cyst an inch in thickness extended upward beyond the superior border of the decompression opening where the cortex appeared normal; this cyst extended downward to the base of the skull. It was bluish white and contained many new vessels. The cyst was punctured and a portion of its outer wall excised; much straw-colored fluid escaped so that the underlying cortex now became convex instead of concave; the cortex was pale but otherwise normal. Usual closure; no complications. There was some oozing of cerebrospinal fluid from the lower angle of incision for eight days (the longest in any case). On the second day after operation, it was noticed that the left hand was no longer clenched. All sutures removed on the seventh day after operation. Oct. 24, 1913, sixteen days after operation, the patient was discharged surgically.

Nov. 1, 1913, twenty-three days after operation, there was much improvement. Patient is now using left hand and tries to pick up things (right hand being tied). Is walking some (supported). Says "Ida" (the name of her nurse). Notices objects and her surroundings.

Dec. 1, 1913, fifty-three days after operation, there is great improvement. Uses left hand; can extend fingers. Walks well, but still needs a "finger-support." Says "Papa, Mama, Daddy" and a number of other words.

Dec. 20, 1913, seventy-three days after operation, the child is walking alone; drags left leg slightly. Decompression area is tense; fundi still reveal dilated retinal veins and some blurring of disk margins.

Jan. 15, 1914: Still improves, especially mentally; can now say several more words. Difficult to advise second operation on account of the great improvement, but it will relieve the pressure effects of the cyst still more.

Second Operation.—Jan. 24, 1914. Left subtemporal decompression. Usual incision and bone removed; no complications. Dura rather tense, but not so thickened as on right side. When the dura was incised, much cerebrospinal fluid escaped; an old hemorrhagic cyst formation extending down over upper one-fourth of the decompression opening was exposed; it was very shallow, however, and had been practically absorbed, little more than a thickened discoloration being present, so that there were no clinical signs of its presence. (Mighty interesting in that the paralysis clinically indicated a hemorrhage only on the right cortex—the hemorrhage over the left cortex being practically absorbed). Usual closure. All sutures were removed on the sixth day after operation; the child was discharged surgically Feb. 8, 1914, 12 days after operation. Treatment: massage and exercises as before operation.

Feb. 24, 1914: Walking, but left leg still drags. Mentally much brighter. Fundi: Optic disks pale but clear; retinal veins not enlarged.

May 4, 1914: Patient uses left leg very well now; impairment of left hand much less so that she uses it now. Mentally very bright. Has learned a number of German words from her nurse.

July 10, 1914: Improvement continues both physically and mentally.

Sept. 2, 1914: Marked improvement. Patient is walking with but a slight limp and uses the left hand fairly well. Speaks several small sentences now. Child is becoming well nourished; no digestive disturbances.

Remarks.—The rapid improvement in this case was simply amazing. It seems that children aged 2 years or less improve much more quickly than the older ones; this is what we should expect from the pathology of the condition—the cortex not being primarily damaged but merely its function impaired by the pressure of the overlying hemorrhage and resulting cyst formation. Naturally, the longer it remains, the greater the impairment.

CASE 18.—Willie, aged 8 years. Diagnosis: Mild spastic diplegia. Supracortical hemorrhagic cyst. Operations: First, right subtemporal decompression; second, left subtemporal decompression.

History.—Admitted to the New York Orthopedic Hospital, Jan. 4, 1914. Referred by Dr. R. A. Hibbs. Family history negative. Two brothers and two sisters all well. Personal History: Third child; nine months' baby; very difficult labor requiring the use of instruments. Child "semiconscious" for one week. Scarlet fever, whooping-cough and diphtheria as a child. At 10 months of age, it was noticed that child was unable to stand and that it did not try to walk. When 2 years of age, child would drag the left foot, which had become stiff as well as the left hand; this stiffness has increased. Rather stupid and apathetic; memory is poor. No convulsions. Past Treatment: Massage and exercises; tenotomy of left Achilles tendon. No permanent improvement.

Examination.—Typical spastic diplegia, especially affecting the left side, with flexor contractures. Reflexes all increased, greater on left side; double Babinski (interesting observation in view of the lesion found at operation). Right leg was used rather awkwardly. Left internal strabismus. Fundi: Definite dilatation of retinal veins and distinct blurring along the nasal margins. Mentally impaired. Simon-Binet test: Mentally, a child of 5 years of age. Moving picture, Oct. 12, 1914.

First Operation.—Jan. 5, 1914. Right subtemporal decompression. Usual incision and removal of bone, which was very spongy, thick and vascular. Dura under high tension and very vascular; when it was incised a hemorrhagic cyst was exposed, at least 1 inch in thickness, pressing down on a pale anemic cortex. Much cerebrospinal fluid escaped under tension. Outer wall of cyst removed. Usual closure; no complications. Postoperative recovery negative. All sutures removed on the sixth day after operation. Spasticity of left arm and leg lessened and patient seemed brighter mentally. Decompression area was tense.

Second Operation.—Jan. 31, 1914. Left subtemporal decompression. Usual incision and removal of bone, which was not so vascular or spongy as on the right side. Dura under tension, and on being incised, the upper half of the exposed cortex was covered by a cystic formation half an inch in thickness; many adhesions. (Cause for Babinski on the right foot and also the awkwardness of the right foot. Other than this, no signs of the hemorrhage on this side clinically.) Usual closure; no complications. All sutures removed on the seventh day after operation.

Feb. 21, 1914: Condition at Discharge: Spasticity very much improved; mentally much brighter. Treatment: Massage and exercises as before the operation. March 6, 1914, Moving picture.

June 7, 1914: Marked improvement mentally and physically. Patient walks with only a slight limp; very little spasticity, though left Babinski still persists. Mentally, much brighter. July 27, 1914, moving picture.

Sept. 9, 1914: Improvement in every way. Was irritable formerly, but now has an even disposition—does not cry as he used to. Walks very much better—scarcely a limp. Better in school; has skipped one grade. Memory better. Reads better. Talks better—expressing himself better. Formerly left arm would hang dead, now he uses it at table and in carrying things. No headache. No convulsions. Left eye, formerly "crossed," now straight so that it is not noticeable. Decompression openings are half closed with new bone formation; slight bulging. Left arm does not differ from the right—apparently normal. Knee jerks: Left greater than right; no Babinski can be elicited. No adductor spasm. Simon-Binet test of mentality: A child of 7 years of age.

Remarks.—The mental improvement has been a most gratifying one in these cases; besides making it possible for these children to take care of themselves better, the cooperation of the patient is obtained in carrying out the after-treatment of the exercises of muscle training, etc.—a very important factor in their treatment. The improvement of both convergent and divergent types of strabismus has been observed in a number of our cases.

CASE 24.—Theodore, aged 12 years. Diagnosis: Right spastic hemiplegia. Left supracortical hemorrhagic cyst. Operations: First, left subtemporal decompression; second, right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, Jan. 18, 1914. Referred by Dr. John A. Wyeth. Family History: Three sisters and two brothers alive and well; three died at birth, all labors being instrumental. Personal History: Youngest child (the ninth). Nine months' baby; instrumental delivery. Left eye was swollen and completely closed for several weeks after birth. Child cried from birth up to 8 months of age. Always slept with right eye open. Walked at the age of 3 years with stiffness of right leg; right arm also stiff. Talked at 12 months—has always been "smart." When 1 year old, patient had five convulsions in one day; unconscious; it was then noticed that the right side was paralyzed. When 3 years of age, patient had one short convulsion; never has had any since. Eyesight blurred and very poor.

Past Treatment: A patient of many hospitals—massage, exercises, tenotomies—with no permanent improvement.

Examination.—Well-developed white child. Typical right spastic hemiplegia with flexor contractures. Reflexes: Right increased; right Babinski. Flexor contractures of right leg at knee; 1 inch shortening of right leg. Fundi: retinal veins dilated; entire nasal halves of optic disks obscured. Disks pale with shallow physiologic cups due to new tissue formation; a mild secondary optic atrophy. Moving picture, Oct. 12, 1913. Simon-Binet test, Jan. 18, 1914: Mentally a child of 9 years of age.

First Operation.—Jan. 19, 1914. Left subtemporal decompression. Usual incision; much bleeding in rongeuring bone, apparently due to sinuses in bone, and to adhesions of dura to bone. Dura tense, but not much cerebrospinal fluid escaped. Very dark-reddish hemorrhagic clot on cortex, ½ inch in thickness, extending beyond the bony margins of decompression. Large cortical vessels. Usual closure; no complications. All sutures removed on the seventh day after operation.

Second Operation.—Jan. 29, 1914, ten days after first operation. Right subtemporal decompression. Usual incision; moderate bleeding in bone. Dura under fair pressure. Cortical vessels enlarged; pia-arachnoid "sweated." At upper area of cortex, definite signs of old hemorrhage—even on this side homolateral with paralysis—practically all absorbed and thus showing no clinical signs of its presence; numerous adhesions were severed between arachnoid and dura. Usual closure. All sutures removed on the sixth day after operation.

Feb. 22, 1914: Condition at Discharge: Arm and leg straighter. Can extend right wrist and right fingers. Walks with a limp due to shortening of right leg. Treatment: Massage and exercise, as before operations. March 6, 1914, moving picture.

April 18, 1914: Much improvement, especially in the arm; easily bends right hand at the wrist.

June 7, 1914: Improvement continues. July 27, 1914, moving picture.

Sept. 9, 1914: Marked improvement. "Uses arm much better; can grasp things and use them, which was impossible before the operation. Patient can see much better than before. Is not irritable and nervous." Mentally "very bright." No convulsions. A much more intelligent looking child.

Moderate flexor contracture of right leg with apparent anatomic shortening of the tendon; a tenotomy may be necessary; walks better. Patient can now extend the right wrist; uses the fingers much better. Decompression areas tense; partially covered with a layer of bone which bulges slightly. Reflexes increased on the right side; no Babinski. Fundi:

Retinal veins normal; some new tissue formation about the disk margins; disks rather pale. Simon-Binet test: Mentality is that of a child of 11 years of age.

Remarks.—Although this patient is 12 years of age, yet his improvement has been very definite. Naturally, the younger the children, the greater the improvement to be expected from an early operation. The oldest case has been of a man aged 21; his improvement has been less marked than the younger patients having lesions of similar extent and pressure.

CASE 30.—Martha, aged 10 years. Diagnosis: Spastic diplegia of extreme type. Supracortical hemorrhagic cyst. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, March 24, 1914. Referred by Dr. Royal Whitman. Family history negative. Three younger children well and strong. Personal History: First child; nine months' baby; difficult labor requiring the use of instruments. Entire head contused; laceration of scalp behind left ear extending forward to top of head. "Doctor thought child would die." Blue for one week; could not swallow; comatose. On the third day, general convulsions began, lasting two hours until child was thought "dead." Gradual improvement until 2 years of age. From 2 to 7 years of age, patient had "spasms"—became "blue around mouth," and twitching of left side of body until entire body became stiff and rigid—more on right side; no loss of consciousness. These spells lasted two or three minutes and occurred only when child was irritated or frightened. Patient has never walked. No diseases of childhood. Constipated during past three years. Past Treatment: All kinds of treatment; braces at 2 years of age for one year. Osteopathy for one year; electricity for one year. Massage, exercises and gymnastics for past five years; no improvement.

Examination.—Typical spastic diplegia of extreme degree with flexor contractures of arms and legs; left side worse; extreme adductor spasm. Poorly developed. Speech is very difficult to understand. Respiration is noisy and difficult because of a laryngeal spasm. Right pupil larger than left. Fundi: Dilated retinal veins; marked blurring of nasal halves of optic disks. Tongue large and protrudes; continuous dribbling and drooling of saliva. Reflexes all increased, left possibly more; double Babinski. Mentality much impaired. Simon-Binet test: A child of 6 years mentally. Moving picture, March 6, 1914.

Operation.—March 26, 1914. Right subtemporal decompression. Very difficult case for anesthesia; impossible to pass tube into larynx because of spasm. Usual incision; bone vascular and spongy. Dura was much thickened and very tense so that cerebrospinal fluid spurted out under high pressure. A hemorrhagic supracortical cyst was exposed extending beyond the decompression opening; it tended to protrude on account of the very high pressure. While a small portion of the outer wall of the cyst was being incised the child "went bad"—respirations became labored and spasmodic, and brain pulsated feebly about 30 or 40 per minute. Heated oxygen; artificial respiration; hot coffee by rectum; improvement. Usual closure in haste. While applying dressings and bandage, child again ceased to breathe and it seemed that child was dead; edema of lungs apparently. After ten minutes of artificial respiration, rhythmic tongue traction, oxygen, atropin and camphor in oil, the child improved; patient was "blue"—no corneal reflex—pupils widely dilated and no pulse for half an hour, but child gradually rallied. Three doses atropin, 1/100 grain, 5 minims of camphor in oil and 3 ounces of hot black coffee by rectum after child reached the ward. Six hours later, child was in good condition. Conscious. Temperature, 100. Pulse, 130. Respirations, 20. After the operation respiration slightly improved. All sutures removed on sixth day after operation.

April 5, 1914: Condition at Discharge: Ten days after operation, respiration quiet now and not difficult. Spasticity much lessened; patient can use the hands much better. Treatment: Massage and exercises as before the operation.

May 10, 1914: Patient walking with finger-support but with difficulty; less spastic. Speech much improved.

July 27, 1914, moving picture.

Sept. 14, 1914: Much brighter mentally. Legs and arms much more limber. Walks alone 20 to 25 feet. No convulsions. Less irritable and restless. Less spasms of legs and arms. Can go up and down stairs alone now, which she could not attempt before. Talking improved but the breathing is about the same. Has not had massage for past two months but has improved right along.

Marked lessening of the spasticity and contractures; left Achilles tendon still shortened—undoubtedly an anatomic shortening of tendon itself owing to its long contracture; a tendon lengthening is advisable. Reflexes are still increased; double Babinski not so definite. Fundi: Retinal veins still slightly dilated and some edema still remains along the nasal margins of the optic disks. Marked improvement mentally. Simon-Binet test shows a child of 7 years of age.

Remarks.—A second decompression on the other side of the head is advisable in this case to lessen further intracranial pressure. The operation has been delayed in the hope that the respiration will still improve and thus lessen the risk of the operation.

CASE 36.—Sidney, aged 32 months. Diagnosis: Spastic diplegia. Supracortical cystic formation. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, May 3, 1914. Family History negative. One sister, aged 5 months, alive and well. Personal History: First child; nine months' baby; difficult labor—"three days and three nights"; non-instrumental. Child has been "weak" from birth; no convulsions. Child did not lift its head until 16 months of age. Has never talked or walked. Cries constantly and moves arms and legs continuously when awake; "never quiet." Does not understand; does not notice. Very "rigid" at times. Little strength in legs; more strength in arms. No convulsions. Fontanels not closed at 26 months. Child becoming "stiffer" and more "foolish." Past Treatment: Massage, electricity, exercises, etc., at several hospitals; no improvement.

Examination.—A typical case of spastic diplegia. Child lies in bed "stiff and straight"—eyes turned up to the ceiling; frequent jerking of arms and legs. Cries constantly. Reflexes: Knee jerks increased; double Babinski present. Fundi: Dilated retinal veins; nasal halves of optic disks obscured. Mentally: Apparently an imbecile. Moving picture, March 6, 1914.

Operation.—May 7, 1914. Right subtemporal decompression. Usual incision and bone removed; no complications. Characteristic "cracks" in bone which oozed freely. Dura moderately tense; not thickened, although whitish and rather pale. Cortex bulged through dural opening and much cerebrospinal fluid escaped; edematous pia-arachnoid ½ inch in thickness, forming a sort of "blanket" over cortex. Cortex pulsating normally at end of operation. Usual closure; no complications.

Recovery uneventful. All sutures removed on the sixth day after operation. Child much quieter.

May 14, 1914: Condition at Discharge: Seven days after operation, child cries only at times. Legs do not seem so stiff. Reflexes still increased; double Babinski present. Fundi: Retinal veins less dilated; only the nasal margins of the optic disks are blurred. Treatment: Daily massage and exercises as before the operation.

July 10, 1914: Marked improvement, both physically and mentally. Child is now trying to walk; seems to notice his surroundings.

July 27, 1914, moving picture.

Sept. 15, 1914: Improved in every way. Now walks alone. Says a number of words. No convulsions. Mentally very much better; now plays with toys; cries very infrequently.

Decompression area bulging slightly; tense. Reflexes: Knee jerks increased; no Babinski now present. No adductor spasm. Fundi: Retinal veins less dilated; no edema of the optic disks but some new tissue formation along its margins.

Remarks.—The improvement in this case is most apparent. For a child of 32 months of age which has never talked or walked, and then four months after the operation to be walking alone and even talking a number of words, is truly remarkable. As there are still signs of increased intracranial pressure as shown by the tense decompression area and by the ophthalmoscopic examination, a bilateral decompression is advisable. The absence of a definite walled-off cyst at the site of the decompression opening and merely an edematous

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pia-arachnoid of varying thickness producing, with its many adhesions, a cystic formation or blanket overlying the cortex has been observed in a number of our cases; the relief of the general intracranial pressure, however, apparently suffices.

CASE 42.—Mollie, aged 7 years. Diagnosis: Left spastic hemiplegia. Supracortical cystic formation. Operation: Right subtemporal decompression.

History.—Admitted to Polyclinic Hospital, May 10, 1914. Referred by Dr. John A. Wyeth. Family history negative. Two younger children well and strong. Personal History: First child; nine months' baby; breech delivery; very difficult labor but no instruments used. Baby "dead" for half an hour; artificial respiration. Nursed with difficulty; cried continuously. When 8 months old, it was noticed that child did not use its left arm and left leg, which were "stiff." At 3 years of age, child began to walk but only a few steps and then would fall; would trip constantly. Cannot run even now, trips frequently; left leg drags. No convulsions. Child feeds itself, but is unable to use left hand. Patient was not allowed in public schools as authorities said it was "crippled"; the School for Crippled Children refused to admit it because patient was "nervous." Past Treatment: Massage, exercises and electricity during past four years; no improvement. Moving picture, March 6, 1914.

Examination.—Typical left spastic hemiplegia with flexor contractures. Reflexes increased on left side; left Babinski. Fundi: Dilated retinal veins; distinct haziness of nasal margins of optic disks. Mentality impaired; speech fair. Simon-Binet test: Mentally a child of 4 years of age.

Operation.—May 11, 1914. Right subtemporal decompression. Usual incision and bone removed; no complications. Dura tense but not vascular or apparently thickened; no adhesions. Cerebrospinal fluid spurted 2 inches and much fluid escaped. Cortex edematous, with many adhesions, producing a cystic formation half an inch in thickness; large cortical veins extended downward vertically over temporosphenoidal lobe. Cortex tended to bulge under such great tension that bony opening was enlarged upward 1 inch and dura likewise opened; cortex protruded so much that a ventricle puncture was attempted but not successful. Usual closure; no complications. All sutures removed on the seventh day after operation.

May 24, 1914: Condition at Discharge, thirteen days after operation: spasticity has lessened. Brighter mentally. Treatment: Massage and exercises as before operation.

July 6, 1914: Marked improvement. Patient walks with but a slight limp, the heel touching the floor. Uses the left hand well. Mentality much improved; speech good. July 27, 1914, moving picture.

Sept. 14, 1914: Improvement continues both physically and mentally. Walks much better; does not fall now as formerly; very slight limp. Mentally brighter; more observant. Simon-Binet Test: A child of 5 years of age. Uses left arm well. No convulsions. "Another child," mother says.

Decompression opening not closed; bulging slightly. Knee jerks: left greater than right; no Babinski. No adductor spasm; no shortening of the Achilles tendon. Fundi: Negative; optic disks have assumed distinct margins; normal pinkish color.

Remarks.—Here again, the improvement has been very rapid. Within four months, the child is walking with the heel touching the floor, the left arm is being used and the mentality has so changed that a Simon-Binet test records an improvement of one year. In this case, the unilateral decompression has apparently relieved the intracranial pressure to such an extent that a bilateral decompression will not be necessary.

CONCLUSIONS

Naturally, we do not believe that all cases of spastic paralysis should have a cranial decompression; in some mild cases tendon lengthenings alone are sufficient, and this is especially true in the absence of mental impairment. But those selected cases of spastic paralysis, particularly of the hemiplegic and paraplegic types, which show signs of increased intracranial pressure by an ophthalmoscopic examination, are the cases that can be very much improved by such a procedure. The cases of agenesis and maldevelopment of the cortex of course *cannot* and *do not* show signs of increased intracranial pressure, and are therefore easily excluded by an ophthalmoscopic examination; besides, the cases of lack of development of the cortex and pyramidal tracts are frequently premature babies, being born the seventh or eighth month, so that a careful history is very important.

We are having moving pictures taken of the patients before operation, and at regular intervals after the operation, in order that the physical impairment of posture and gait may be accurately recorded.

Likewise, a Simon-Binet test of the mentality is being recorded before operation and at regular intervals after operation; the mental improvement in our cases has been very impressive.

A lumbar puncture is being made before operation in order to estimate the intraspinal pressure as a means of corroborating the signs of increased intracranial pressure as shown by an ophthalmoscopic examination.

A Wassermann test of both the blood and cerebrospinal fluid is made in all suspicious cases.

We wish to repeat that this paper is merely a report of work being carried on to improve the condition of selected cases only of spastic paralysis. It is by no means a cure, and possibly the improvement in our selected cases is only a temporary one—we cannot tell. But from the pathology of these selected cases in which operation has been performed and the general continuous improvement which has resulted and is still progressing, we feel justified in making a report of the work in the hope that it may throw some light on the treatment of this very pitiful condition.

20 West Fiftieth Street—104 East Fortieth Street.

OCCURRENCE OF RETURN CASES OF SCARLET FEVER AND DIPHTHERIA

EXPERIENCE OF THE CHICAGO DEPARTMENT OF HEALTH SINCE THE INTRODUCTION OF A SYSTEM OF CLASSIFIED QUARANTINE

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In the fall of 1913 the department for the first time published a complete handbook for the bureau of medical inspection, and in that connection made quite extensive changes in the methods hitherto employed in connection with quarantine.

Owing to unavoidable delays in connection with the budget, etc., the changes were not put fully into effect until March 15, 1914.

Our experience with classified quarantine from March 15 to November 1 has been quite instructive. As a preliminary explanation let me give a summary of the methods of quarantine now enforced by the department.

The result sought is to avoid the imposition of all restraint upon the family of the patient when consistent with effective isolation of the patient and "carriers," the object being, in brief, to quarantine the public out and to quarantine the patient in. To this end the following rules will be enforced:

A.—Isolation with Trained Attendant: If the patient and trained attendant can be safely isolated in one or more rooms and arrangements made to supply the patient and attendants with food and other necessaries without it being necessary for the attendants to leave the room or rooms under quarantine, and if no article or utensil be permitted to be taken from the room or rooms under quarantine unless said articles be first thoroughly disinfected, the other members of the household may be permitted to go and come without restraint, provided they yield negative cultures from nose and throat, except that children in an apartment or dwelling where the patient is quarantined must not be permitted, under any circumstances, to attend school, Sunday school, or places of assembly, or to use public conveyances, and that schoolteachers and others whose occupations bring them into immediate contact with numbers of children or those employed in the handling or sale of milk must not be engaged in such occupation until the case is terminated, provided that the prohibition will not be enforced if the individual yields a negative culture from nose and throat and makes a change of domicile.

In all cases quarantined, as specified in Rule A, the room or rooms set aside for the use of the patient and attendants must be placarded "For Patient and Attendant Only" (Form H. D. M. 419a), and the attendant shall not leave the patient's quarters without thoroughly washing face and hands and removing outer robe or garment.

In cases quarantined under this rule the attendants may be permitted to leave the house for not to exceed one hour per day under the following restrictions, provided examination of cultures taken from their throats by the attending physician every fourth day and sent to the Municipal Laboratory gives negative results.

1. They must thoroughly wash their faces and hands and change their outer clothing.

2. They must, if possible, leave the house by an exit not used by other members of the household.

3. They must not enter places of business, stores, etc., or use public conveyances or visit places of assembly.

B.—Isolation Without Trained Attendant: Where the conditions are such as to render it impossible to provide special trained attendants who are quarantined with the patient, but where it is possible to set apart a room or rooms for the exclusive use of the patient, those members of the household whose noses and throats yield negative cultures may be permitted to go and come under the restrictions specified in Rule A, provided that one member of the household be designated as attendant for the patient, and that the person designated must not leave the premises except by special permission of the Health Department after a negative throat culture is obtained, and after he or she has thoroughly washed his or her face and hands and put on outer clothing not worn in the sick room, and complied with the other requirements prescribed in Rule A for attendants leaving the house; and, provided further, that no other member of the family be permitted to come in contact with the patient or that any article of any kind be permitted to be taken from the sick room unless and until said article has been thoroughly washed or disinfected.

In all cases quarantined as specified in this rule (B) the room or rooms set aside for the patient and attendant must be placarded "For Patient and Attendant Only" (Form H. D. M. 419a), and the attendant shall not leave the patient's quarters without thoroughly washing the face and hands and removing the outer robe or garment.

C.—Impossible to Isolate: When the condition is such as to render it impossible to set aside a room for the exclusive use of the patient, hospitalization will be enforced; provided, that if for any reason this is impossible, the nature of the restraint to be imposed will be determined by the Commissioner of Health in accordance with the necessities and conditions of each individual case.

In the subjoined tables, "susceptibles" means persons in the family who have not previously suffered from an attack of the disease under quarantine. For the first three months the number of susceptibles is somewhat incomplete, as at that time our blank did not contain space for reporting the number. The effect of this, of course, would be to diminish somewhat the percentage of secondary cases. By "secondary case" is meant one occurring among the susceptibles in the family at a date at least two weeks beyond the usually recognized limits of the period of incubation.

Among the hospitalized cases of diphtheria we excluded one in which the father developed diphtheria fifteen days after the child returned from the hospital, the child's throat being negative. We also excluded in Class A quarantine for scarlet fever an instance in which two children in the family developed the disease within five days after the onset of the first case.

In connection with the hospitalized cases, it will be understood that diphtheria cases are sent to the hospital under the control of the department, and scarlet fever cases are for the most part sent to the County Hospital; but a portion of them are sent to the Durand Hospital, conducted by the Memorial Institute for Infectious Diseases.

TABLE 1.—SCARLET FEVER, MARCH 15, 1914, TO NOV. 1, 1914

	No. of Cases	Susceptibles	Secondary Cases	Per Cent.
A Quarantine	92	112	1	1.087
B Quarantine	306	234	16	5.22
C Quarantine	870	865	60	6.9
Hospitalized	430	315	10	2.32

TABLE 2.—DIPHTHERIA, MARCH 15, 1914, TO NOV. 1, 1914

	No. of Cases	Susceptibles	Secondary Cases	Per Cent.
A Quarantine	134	496	0	0.0
B Quarantine	508	2,279	6	1.18
C Quarantine	2,024	9,136	98	4.88
Hospitalized	656	1,903	1	.15

The results given in these tables seem to me to be very striking and to present conclusive evidence that the system of classified quarantine has justified itself.

The attempt has been both to rationalize, and, to coin a phrase, to humanize quarantine restrictions. The permission to go out daily for reasonable exercise now given to attendants on quarantined cases, and the entire liberty of movement given to the adults and wage earners, has rendered the maintenance of quarantine very much easier because it is less of a hardship.

The only recent figures which I have at hand showing a similar study of the occurrence of secondary cases under conditions as they exist among the crowded population of a large city are those given in the weekly *Bulletin* of the New York Department of Health of April 11, 1914 (Table 3).

TABLE 3.—SECONDARY CASES IN NEW YORK CITY

	Cases	Secondary Cases	Per Cent.
DIPHTHERIA			
Quarantined at home.....	1,142	149	13
Removed to hospital	505	7	1
SCARLET FEVER			
Quarantined at home	1,093	91	9
Removed to hospital	327	20	6
MEASLES			
Quarantined at home	2,462	339	14
Removed to hospital	162	8	4

Cooperation in Public Health Work.—Cooperation of all possible resources, medical and non-medical, is what counts in preventing unnecessary sickness and premature death. It is worth striving for!—*American Journal of Public Health.*

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SENSITIZED VERSUS NON-SENSITIZED TYPHOID BACTERIA IN THE PROPHYLAXIS AND TREATMENT OF TYPHOID FEVER

WITH A REPORT OF SEVENTEEN CASES TREATED WITH SENSITIZED VACCINE *

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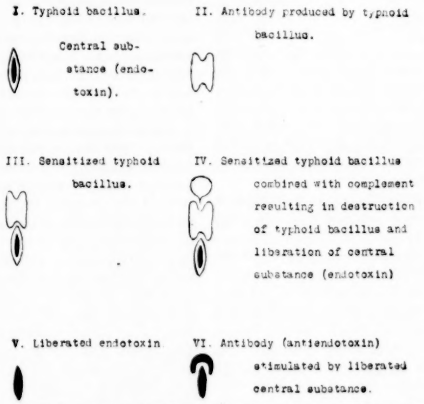
Sensitization means the mixing of an antigen (bacteria, red-blood cells, proteins, etc.) with its specific antibodies. These antibodies are found in the serum of an animal that has been previously immunized with the particular antigen. If, for example, a rabbit or goat receives injections of typhoid bacteria, the usual antibodies (agglutinins, bacteriolysins, bacteriotropins, (opsonins), complement fixation bodies, etc.) appear in its serum. If an emulsion of typhoid bacilli be now mixed with this serum, inactivated, the bacteria become sensitized; that is, during the process of sensitization the bacteria unite with the specific immune bodies present in the serum. Sensitized bacilli may be dead or living, depending on whether the bacteria have or have not been killed previous to being mixed with the immune serum.

I was the first definitely to demonstrate, in 1910,[1] that the immunity attained by injections of non-sensitized typhoid bacteria was actively bacteriolytic and only slightly bacteriotropic in character, while that with sensitized bacteria was mainly bacteriotropic. Intravenous inoculations of rabbits and guinea-pigs with emulsions of non-sensitized bacteria (ordinary vaccines) produced a serum rich in agglutinins, precipitins, bacteriolysins and complement fixation bodies, and but poor in bacteriotropins. Similar doses of completely sensitized bacilli produced hardly any agglutinins, precipitins or complement fixation bodies, few bacteriolysins, but a very strong bacteriotropic (opsonic) serum, which was also curative for mice. Broughton-Alcock[2] corroborated this finding in man.

The following explanation was offered for these differences: By means of sensitization the typhoid bacteria and their immune bodies (amboceptors) are combined in the test tube so that when injected into an animal the bacteria are ready for immediate attack and destruction by the complement of the blood. With the injection of ordinary non-sensitized bacteria, the tissue cells first manufacture the antibodies (bacteriolysins, etc.) which can unite with the bacteria, that is, sensitize them, before the latter can be broken up. Whenever typhoid bacteria are disintegrated, their central portion, the so-called endotoxin, is liberated. From his experiments the author believes that this central substance can probably act as an antigen and stimulate its own antibody, which is bacteriotropic in character (the anti-endotoxin, for purposes of designation). Thus, sensitization is a biologic means of preparation for attaining the rapid destruction of the typhoid bacteria, liberating their central substance and allowing the latter to stimulate their own antibodies, bacteriotropins in nature.

Naturally, some bacteriotropins (opsonins) will appear also with injections of ordinary bacteria, especially if repeated for a long period of time; as then sensitization occurs in vivo after sufficient bacteriolysins have been formed.

When working with sensitized bacteria one must be certain that all the bacilli are saturated with antibodies (completely sensitized), otherwise immune bodies will be stimulated by the bacteria which were left unsensitized (incomplete sensitization). This probably explains the reports of some observers who find numerous agglutinins, complement fixation bodies, etc., after injection of sensitized bacteria (Nègre[3]). If, too, it is remembered that individual strains of typhoid bacteria so frequently differ from each other in their antibodies, a further possibility for incomplete sensitization is realized (Garbat,[4] Raskin[5]). With these preliminary remarks, the following discussion of the relative value of ordinary typhoid vaccine and sensitized typhoid vaccine in the prophylaxis and treatment of typhoid fever will be more readily understood.


I. Typhoid bacillus.
Central substance (endotoxin).
II. Antibody produced by typhoid bacillus.
III. Sensitized typhoid bacillus.
IV. Sensitized typhoid bacillus combined with complement resulting in destruction of typhoid bacillus and liberation of central substance (endotoxin)
V. Liberated endotoxin
VI. Antibody (antiendotoxin) stimulated by liberated central substance.

Schematic representation of ordinary and sensitized typhoid bacteria and their antibodies.

The inoculation of *dead typhoid bacteria (ordinary vaccine)*, as a *prophylactic measure* against typhoid fever is now well recognized. The efficiency of this procedure is easily explained on the basis of the biologic indications to be met. The injection of bacteria into a normal individual is usually followed by the production of a great number of various antibodies: bacteriolysins, agglutinins, bacteriotropins (Bischoff,[6] Harrison,[7] Leishman,[8] Levy,[9] Shoemaker,[10] Thomas,[11] Wollstein,[12]) and occasionally complement fixation bodies. Some of these immune agents are probably capable of destroying the typhoid bacilli. If the inocu-

* Read at the New York Serological Society, Dec. 4, 1914.

* From the laboratory and wards of the German Hospital.

1. Garbat and Meyer: Ztschr. f. exper. Path. u. Therap., July 29, 1910.

2. Broughton-Alcock: Lancet, London, Aug. 24, 1912, p. 504.

3. Nègre: Comp. rend. Soc. de biol., Feb. 28, 1913, p. 371.

4. Garbat: Am. Jour. of Med. Sc., July, 1914, p. 84.

5. Raskin: Centralbl. f. Bakteriol., 1908, xlviii, No. 4, p. 508.

6. Bischoff: Ztschr. f. Hyg. u. Infectionskr., 1906, liv, 262.

7. Harrison: Jour. Royal Army Med. Corps, 1906, 1907, vii, 63, viii, 472.

8. Leishman: Jour. Royal Army Med. Corps, 1905, vi.

9. Levy: Wien. klin. Wchnschr., 1897, x, 746.

10. Shoemaker: New York Med. Jour., 1909, i, 265.

11. Thomas: Tr. Path. Soc. Phila., 1909, xii, 379.

12. Wollstein: Jour. Exper. Med., 1912, xvi, 315.

lated individual is exposed to infection, that is, if live bacteria find their way into his body, they are readily destroyed and will not multiply. Naturally, if the army of invaders is excessive, or the defense too slight, infection will arise in spite of the prophylactic measure. Fortunately, such instances are exceptional. The protection is therefore explained on a bacteriolytic, and to a less degree, on a bacteriotropic basis. From clinical experiences it has been shown that immunity persists even after these immune bodies cannot be demonstrated any longer (Cole[13]).

The *prophylaxis attained by the injection of Besredka's living sensitized typhoid vaccine,* cannot, if sensitization is complete, be explained on identically the same principles, for, as soon as the sensitized bacteria enter the normal system, they combine with the complement of the blood and are broken up. The agglutinating and bacteriolytic antibodies and the complement fixation bodies are therefore either not produced at all or only in very small quantities; consequently, the reliance for protection must be placed on the bacteriotropic or phagocytic activity, stimulated by the liberated central substance of the broken-up bacteria, the so-called endotoxin. The fact that the bacteria are alive does not necessarily mean that they are harmful, because, as was mentioned above, they are destroyed by the organism immediately after injection. The relative excellence of the sensitized method over the original Wright method has not been definitely established, but the fact that Besredka and Metchnikoff[14] strongly advocate it, is an important point in its consideration.

It may be in place here to consider a problem which has suggested itself to me, but which I have thus far been unable to carry out. If the injection of ordinary vaccine causes mainly a bacteriolytic reaction, and the administration of sensitized vaccine mainly a bacteriotropic response, would it not be advisable in prophylactic immunization to inoculate individuals with both sensitized and non-sensitized vaccines? In this way a combined form of immunity would be attained. As experimental basis for this suggestion I have shown that if the serum from rabbits immunized with non-sensitized bacteria is mixed in equal quantity with the serum from rabbits immunized with sensitized bacteria, this mixed serum was more curative for mice infected with typhoid bacteria than equal quantities of either serum alone. Naturally it will be necessary to establish the best method for such mixed immunization; whether the two vaccines should be administered separately and at different times or whether they should be given at the same time, as would be accomplished also by an incompletely sensitized vaccine.

In the therapy of typhoid fever the use of the ordinary non-sensitized vaccines has not met with as favorable results as for purposes of prophylaxis. Up to the present time several thousand cases have been treated (Watters,[15] Horner[16]), but the beneficial effects in the majority of instances are not sufficiently marked to warrant the employment of the vaccines as a routine procedure. Occasionally a striking crisis in the course of the disease is observed, but just as frequently an increase in the severity of the symptoms develops. Reports of instances in which the effects have been distinctly harmful (or even fatal) must also be considered.

When the biologic basis for the possible therapeutic value of vaccines in typhoid fever is asked, the answer is much more difficult and hypothetical than in the question of prophylaxis. Several factors are to be kept in mind. First, typhoid fever is a self-limited disease, running a typical clinical course and probably associated with definite phases of immunity to account for its characteristic picture and self-limitation. Second, the number of bacteria existing in a typhoid patient is very great; they circulate everywhere and stimulate the tissue cells continually, resulting in the formation of agglutinins, bacteriolysins, bacteriotropins, complement fixatives, etc.; these antibodies are apparently produced very slowly and are either not of sufficient number or of a nature suitable to overcome the infection quickly. It usually takes four weeks or more to ultimately accomplish this. The reason for this prolonged period may possibly be ascribed to the structure of the typhoid bacillus. As was said above, this bacterium belongs to a class of micro-organisms whose central substance, the so-called endotoxin, is liberated only after the bacillus has been broken up. This central substance also stimulates the formation of antibodies (antiendotoxins for purposes of designation) which are bacteriotropic in action and probably important elements in the curative process of typhoid fever.

Were it permissible to divide the phases of typhoid fever from an immunological point of view, as is usually done from the clinical aspect, one would assume that the first stage consists of the multiplication of the invaded typhoid bacilli. Then as a defensive reaction, the tissue cells stimulate the formation of antibodies (bacteriolysins, agglutinins and but few bacteriotropins). The next phase sees the numerous bacteriolysins attack the bacteria, sensitize them and with the aid of the complement the micro-organisms are broken up and their endotoxins liberated. The latter thus freed further stimulate the tissue cells with the result that other protective bodies (antiendotoxins) are produced in sufficient numbers to prevent any harmful effects and finally to help overcome the infection. Naturally, these very schematic stages are not sharply limited and do not fall within definite periods of time. Sluggishness or absence of the proper reaction on the part of the tissue cells at any stage is followed by a protraction of the disease or even death; death by infection if the bacteria multiply and are not broken up due to insufficient response by the bacteriolysins, or death by intoxication if marked bacteriolysis has occurred, or has occurred so quickly that the liberated endotoxins are not in turn neutralized by sufficient antiendotoxins.

Keeping this explanation in mind, one can readily observe that the injection of *ordinary vaccines* in typhoid fever aims at nothing more than what the body is already doing with all its power, namely, the production of antibodies for the breaking up of the bacteria, the liberation of their endotoxins and the ultimate manufacture of antiendotoxins. There may be cases in which the body cells are inactive and are stimulated to activity and production of antibodies only after the inoculation of the vaccine. Here the ordinary bacterins are of undoubted aid.

As a general rule, however, it is best to relieve the sick body as much as possible of any active reaction. During an infection the tissue cells are less responsive

13. Cole: Ztschr. f. Hyg. u. Infectionskr., 1904, xlvi, 371.
14. Besredka: Bull. de l'Inst. Pasteur, 1910, p. 241; *Ibid.* 1912, p. 527. Metchnikoff and Besredka: Ann. de l'Inst. Pasteur, 1911, xxv, 193.
15. Watters: Med. Rec., New York, 1913, lxxxiv, 518.
16. Horner: Boston Med. and Surg. Jour., June 25, 1914, No. 26.

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than during health, especially if the disease be a severe and prolonged one. That is why an efficient serum (passive immunity) would be the ideal form of specific therapy. Sensitized vaccines possibly hold a position between serum therapy and ordinary bacterin treatment. In the first place, they might save the system from the strain of producing the primary antibodies for the destruction of the bacteria, and second, this provision might hasten the stage of liberation of the endotoxins and the stimulation of the antiendotoxins, an important step in the recovery from the disease.

With these ideas in view, I undertook the study of the effect of sensitized typhoid bacteria as a form of active immunity in the therapy of typhoid fever.

Preparation of Sensitized Vaccine.—Three strains of typhoid bacilli that had been isolated from the blood of patients at the hospital were used for preparing the vaccine. Agar cultures of each strain were grown for twenty hours; the profuse growths were washed off with sterile normal saline solution, about 2.5 c.c. for each agar slant. This mixed suspension was sealed in a sterile tube, which was then submerged in water at 60 C. for one hour. This generally sufficed to kill the bacteria. The sterility was tested in the usual manner. The exact total quantity of the emulsion was noted. The strength of the vaccine was standardized at this point of the preparation, that is, before rather than after the immune serum had been added, for I found it more difficult for purposes of standardization to obtain an even distribution of the bacteria (on the counting slide) after the bacteria had been sensitized (agglutinated). Wright's[17] classic method of standardization was employed.

For sensitization I used the immune serum obtained from the same three (then convalescent) patients from whom the bacteria used for preparing the vaccine were isolated. (Their serums had a strong agglutination and complement fixation titer.) In this way it was certain that the antibodies would certainly fit the bacteria, as they both came from the same source; in other words, complete sensitization was attempted. The same object can be accomplished by using the serum from an animal (goat or horse) that had been immunized with the strains of bacteria from which also the vaccine is to be made. The serum was inactivated at 56 C. for one-half hour before being added to the bacterial emulsion. Two c.c. of serum for each 1 c.c. of bacterial emulsion were used. The mixture under cover of toluol was left for twenty-four hours at incubator temperature not exceeding 37 C., and was frequently shaken. At the end of this time the agglutinated bacteria were gently stirred and then centrifugalized for five minutes. The supernatant fluid was pipetted off, more sterile saline solution added, the emulsion again shaken and again centrifugalized. Once more the supernatant fluid was removed and finally the same quantity of saline solution added as was employed before for washing off the bacterial growths from the agar slants. In this way the standardization estimated previously from a sample of unsensitized vaccine held good for the sensitized preparation. The concentrated emulsion after being stirred and shaken thoroughly to make an equal, fine suspension, was finally diluted with one-half per cent. phenol solution so that each cubic centimeter contained 2,500 million sensitized typhoid bacteria.

17. Citron-Garbat: Immunity, Blakiston's Son & Co., 1914, p. 210.

Dosage.—The dosage of typhoid vaccines for therapeutic purposes is far from definitely established. As a general rule, however, it may be said that bacteria can be given in much larger doses when sensitized than if non-sensitized. The author found that guinea-pigs inoculated intraperitoneally with double the lethal dose of non-sensitized dead typhoid bacilli would die within ten hours, while the same quantity of sensitized bacteria was well tolerated. Similar results were recently obtained by Cecil.[18] No fixed therapeutic dose of either non-sensitized or sensitized typhoid vaccine has been adopted. In the present series of cases, 500 millions of sensitized bacteria were employed as the standard dose, both for the first and subsequent inoculations. Naturally, one had to be guided by (a) the severity of the illness, (b) the age of the patient and (c) the reaction from the inoculation. Thus, very sick individuals were given only 250 million bacteria. The dosage in children should be regulated according to the weight, 150 pounds being taken as the weight corresponding to 500 million bacteria.

Frequency of Inoculations.—Usually two to four inoculations were necessary until the temperature became normal; as a rule, one inoculation (250 millions) was administered during convalescence with the aim of preventing a relapse. The interval between inoculations was five to seven days, or even longer. It must be remembered that with non-sensitized bacteria, the larger the dose of vaccine, the longer must the interval between the inoculations be. This rule does not apply as strictly to sensitized vaccine, nevertheless 500 million bacteria is a large dose, and more frequent repetition was not deemed advisable. Future experience should guide us in this direction.

Reactions from Inoculation.—Both local and systemic reactions were exceedingly slight. Sensitization in general tends to diminish local reactions.[19] This has been demonstrated for the tubercle bacillus by Fritz Meyer, who uses a sensitized bacilli emulsion (S. B. E.), and also by Citron for the bacilli of mouse typhoid and swine pest, in which instances marked infiltration following the inoculations was avoided by sensitization of the micro-organisms. Besredka noted only very slight local reactions following the prophylactic inoculation of sensitized typhoid bacilli. In my cases a small, red, infiltrated area about the size of a quarter usually appeared around the points of injection within twenty-four hours after the inoculation and persisted for one to two days. In some cases the local reactions were larger, about 3 inches in diameter, but never were they as severe as is observed after the prophylactic administration of the ordinary vaccine. As for systemic reactions, no definite manifestations of a negative phase, that is, increase in the severity of clinical symptoms, were evident.

Results.—In a consecutive series, seventeen cases of typhoid fever were treated with the sensitized vaccine as soon as the diagnosis was definitely established. In the majority of instances this was the second week of the disease. The usual other indications in the treatment of typhoid fever, such as sponge baths or tub baths, rectal irrigations, etc., were not neglected. Of this series, only one patient died. The latter had developed a large, deep, spreading abscess of the thigh

18. Cecil: Paper read before the New York Serological Society, Oct. 9, 1914.

19. It is interesting to note in this connection the recent finding of Jobling that addition of homologous serum to bacteria lessens the occurrence of anaphylaxis, an observation already made by me in 1910.

and scrotum requiring operation. Four patients had relapses. One patient had several very severe intestinal hemorrhages, the first following about thirty-six hours after the first vaccine inoculation. The subsequent vaccine inoculations, however, were well borne, so that it would be unfair to assume the principle of *"post hoc ergo propter hoc."* With this possible exception, no manifestations of a negative phase were observed and no other complications noted. Only in two out of the seventeen cases did the temperatures subside acutely, reaching normal forty-eight to seventy-two hours after the vaccine inoculation; in the great majority, the temperature did not go any higher, but began to show remissions, coming down to normal gradually. It would be futile to tabulate the results of the treatment in reference to any other individual symptoms, as such detailed differences should only be based on a very much greater material. On the whole, the impression was gained that the inoculated patients ran what might be termed mild courses with comparatively few complications. I am fully aware how guarded one should be about the results of any form of specific therapy in a disease like typhoid fever. Normally, all types of illness may exist. Clinicians have frequently observed that during some typhoid seasons the patients will present mild infections without any special treatment whatever. One could attribute beneficial effects to vaccine treatment with certainty only if rapid improvement or crisis in the course of the disease would set in soon after the inoculation. Such acute changes can be expected more often by treatment with a specific *serum* than with a *vaccine*, for by the former (passive immunization) antibodies are injected ready for neutralizing the poison; while in the latter instance, the antibodies must first be manufactured by the tissue cells. This ever-existing factor in vaccine therapy makes it absolutely necessary to start the treatment in typhoid fever as early in the course of the disease as possible, at a time when the reactive power of the individual is still responsive and unimpaired by the infection.

SUMMARY

In summary it may be said:

1. The treatment of typhoid fever by sensitized typhoid bacteria offers a more rational therapy from an immunologic point of view than by the ordinary non-sensitized vaccine.

2. The repeated inoculation of large doses of sensitized vaccine even in very sick patients, was not attended by any harmful effects or a distinct negative phase; the general course of the disease seemed milder and the complications less; the occurrence of a crisis in the infection took place in a small percentage of cases, the improvement usually being gradual. Perhaps more striking results will be attained by a larger number of smaller doses more often repeated.[20]

20. The patients referred to were treated in 1911, but publication was deferred until a series could be treated by smaller and more frequently repeated doses. This was not, however, possible.

Geographic Distribution of Diseases.—In certain diseases, of which the cause or means of spread is unknown, morbidity reports show their geographic distribution and varying prevalence and the conditions under which cases occur. This information has great potential value in attempts to ascertain their causes and means of spread.—John W. Trask, Supplement No. 12, Public Health Reports, April 3, 1914.

GUIDES IN VACCINE THERAPY

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Since the opsonic index variation method proved to be practically unsuited as a guide in the general application of vaccine therapy, most users of vaccines have not attempted to discover individual indications as to dosage, but have established a general routine initial dose, to be increased by a certain amount at a certain interval, and have persistently carried out their program as long as the treatment was adhered to. For this reason one object of the present article is to gather and describe such symptoms and manifestations as there is reason to believe give clue to that which takes place in the body following vaccine administration, and which may reliably guide to individual case variation of both dose and interval.

In general there has been a tendency to overdo and abuse this form of treatment which, in many instances, when properly handled, proves of immense value; and through frequent bungling and total disregard of the principles involved there is great danger that it will be brought into disrepute with the profession at large. To aid in counteracting this I am offering the record of my experience and interpretation of results obtained by other physicians for whom I have prepared vaccines, and I feel certain that the facts noted will be found so much in line with observations which all who have used these agents must have made—although, perhaps, they may not have paused to analyze them—that their truth and value will be readily understood, and may help in guiding aright others with less experience in this line.

It has been truly said that it is as wrong as it is useless to attempt to convince through argument, but that one's duty is to offer evidence and let the unprejudiced convince themselves. This principle applies very strongly to those who, despite what one would think are insuperable objections, make use of stock vaccines. No one for a moment would imagine that an attack of measles, although known to confer great specific immunity, could aid in preventing or in overcoming a typhoid infection; and yet if we employ a stock vaccine, in at least ninety-nine instances out of a hundred we follow a similar procedure. Let any one who has fixed on a variety of stock vaccine for use in a given case look up the possible bacteriology of the disease process which he proposes to treat, and then calculate his chances of striking, even by name, the guilty organism, let alone the particular strain active—which may even be one as yet unrecognized by science—the last consideration a factor which so often confuses exact bacteriologic diagnosis and serum therapy, but which is entirely avoided in vaccine treatment when autogenous products are used.

The fact that a given stock is composed of a number of strains cannot reassure, since at least all but one would be given needlessly and could not but burden, if they did not seriously injure, the patient's reactive mechanism—as in the case of the rabbit dosed with colon bacilli in order to render him susceptible to organisms to which he is normally immune, an effect which could be produced by the use of any stock vaccine on the market. Besides, the polyvalence of most vaccines relies solely on difference in source and not on actual known biologic differences

of their constituent micro-organisms, so that many are polyvalent in name only. Furthermore, not entirely understanding what makes a difference in strain, or even the number of such that may exist, or, in fact, that they may not be as illimitable as the variations in the conditions affecting their cultivation, we can easily imagine the great odds that possibly exist against hitting the nail on the head with a dose of stock vaccine even in a disease in which the infecting organism has been named. A striking example, to be recalled in this connection, of the necessity for recognizing and allowing for differences is supplied by Flexner's experience with cerebrospinal meningitis, in which one antimeningococcus serum was found entirely ineffective when used to combat an infection with what was evidently a meningococcus of different nature, although morphologically and culturally identical, and which also, in turn, could be employed in the production of a serum specific for itself but totally without affinity for the other.

Although stock vaccines are thought to be cheaper and more readily obtainable than autogenous, such is not the case, for should it be desired to administer vaccine treatment it is rarely proposed to use less than ten separate injections per patient, and since such doses in the stock vaccines on the market cost 50 cents apiece (in separate syringes, the most popular form, and which, on the average, contain one dose each), there will be a total expense of at least $5, and then we are not considering the fact that any reasonable system of resistance-raising would require that two syringes (necessitating a double puncture, usually) often be used to make up most of the doses called for by the scale determined on, since no series of containers to be had is graduated in such increasing strengths as may advantageously be used, one after the other—even supposing that variation according to symptoms was not attempted.

The cheapest form in which stock vaccines in unit doses may be bought ordinarily is in ampule sets of four or of six, costing 25 cents per dose; but all vials of each set contain the same dose, which is either 100, 250 or 500 million bacteria, according to the set purchased, so that it is difficult to see what use could be made of a single set, while if all three sets were bought the cost would be at least $3, and the nuisance and waste of using part of an ampule at one time, and the whole of one and a fraction of another the next, so great as to make this form of no practical use. Besides, even by using all three sets, one ampule after the other, only three increases in dosage could be effected. Another form in which stock vaccines may be had, though usually only on order to the druggist, is a vial of 10 c.c., most frequently standardized at 100 million organisms per cubic centimeter and costing $3.50. Even with this a ten-dose graduated course, beginning with 1 c.c. and increased 10 per cent. each time, could not be obtained from one bottle of such a size.

These facts are recounted for the benefit of those who think that a stock vaccine is cheaper than an autogenous, the usual cost of which is $5, and which is always supplied in a quantity much greater than would ever be required, which keeps at room temperature for many months and whose dosage is easily measured with the ordinary hypodermic syringe. Such vaccines can also, of course, be put up in a series of single-dose ampules, with doses measured to order, but this is undesirable, since, as I shall show later, the size of any dose after the first should be regulated by a consideration of the effects of the preceding one.

The time required to secure stock vaccine is certainly not less in the long run than that lost in waiting forty-eight hours for the autogenous preparation, since a patient would hardly be kept waiting while the druggist was sent or telephoned to for a supply; and since this must be renewed later, sometimes through order on the wholesaler, the nuisance and time lost is often greater.

Another factor which is not unworthy of consideration is that the public each year is becoming more and more exacting as to the care and attention the medical man gives to his case, and a patient's first thought on being treated with a vaccine is of its modus operandi. When this has been explained the question next arises as to what determined the choice of organism; and when the patient learns, as he surely will soon or late, that this was mere guesswork when exactitude was possible, dissatisfaction and distrust arise. Further, since even with an autogenous vaccine of the trouble-making bacteria, improvement and cure is sometimes difficult to effect and long deferred, the physician himself, knowing full well the chances of missing the mark with a stock vaccine, is apt soon to lose confidence, switch about to another variety or discard the method entirely in disgust. On the contrary, everything connected with the procedure of bacteriologic diagnosis and the making of a special vaccine from the patient's own germ inspires confidence in both patient and physician, and even if the treatment should not prove so effective as hoped (which may rarely happen in suitable and well-managed cases), both would feel satisfied with the scientific accuracy of the effort.

I have sometimes known physicians to have a bacteriologic diagnosis made in a particular case and then to purchase and use a stock vaccine. Although such diagnoses are of variable difficulty and cost, there can hardly be an instance in which the additional preparation of an autogenous vaccine would involve appreciably more labor or expense. The really economical plan would be to ask that a vaccine be prepared, and this would usually entail a determination of the infecting organism.

A person's powers over a particular infection, when his system has not previously dealt with it, must depend on the applicability of enzymes formed by his cells for other purposes — such as the reduction of normal tissue waste — to the digestion of the new protein presented in the form of the attacking organisms. When sufficient bacterial substance is distributed within the body to reach and react with all the main sources of such enzymes (the cells of the lymphatic system), the maximum immunizing processes are operating, and we should certainly keep hands off, so far, at least, as vaccine therapy is concerned. Such conditions always obtain in acute infections, in which the infecting agent exists in the blood or is so disseminated in the other tissues as to reach most of the body's reactive cells (those prominent in inflammation, both of lymphatic and connective tissue origin), or, at any rate, the greatest number of them whose simultaneous activity is compatible with safety to life. In association with such infections continued fever seems to be a positive indication of this full-capacity working, and a daily remittant undoubtedly means the same. An equivalent condition sometimes occurs without noticeable temperature elevation, espe-

cially in pulmonary tuberculosis, in which, as a result of a stimulus to the antibodies from an injection of vaccine, such a large amount of *partially* digested, and therefore especially poisonous — as with peptone — bacterial substance is freed from the disease focus as to injure the tissues generally and thus to depress the reactive mechanism, lowering, at least temporarily, the general resistance to further development of the infection. Such a condition usually exists when extensive areas are involved in a chronic process, and advanced pulmonary tuberculosis may be regarded as uniformly presenting it.

Apart from the foregoing, every troublesome or dangerous infection not amenable to specific treatment, either medical or surgical, should be considered for the immunity-raising methods of vaccine therapy; provided, of course, that we know and can artificially cultivate the infecting agent. As vaccine treatment relies entirely on the vigor of the elemental tissues for the response which can alone make it effective, nothing that can be done to improve the general health can be neglected during its administration; and, above all, particular care must be exercised not to overdose, lest general poisoning of the system, as mentioned above in connection with advanced lung tuberculosis, or from the direct effect of the products of a partial digestion of the vaccine, might result.

It is to be remembered that when we inject a vaccine our purpose is similar to that of the wise mother who gradually increases the amount of starch and other solid food administered to her weaning baby in order gradually to develop powers of digestion never exercised before, but whose special enzymes, as with those elaborated parenterally in the fight against invading parasites, must have existed in some degree, as previously stated, even if only in the inactive state of the "ogens" — pepsinogen, etc. Also, we must not forget that if we give an overdose we are apt to injure the reactive mechanism, destroy or cripple the specific enzyme-producing cells, as might the mother her child's digestion by overfeeding, and in a similar way, through the injurious effect of direct contact with decomposition products, and thus do actual harm. Furthermore, we should understand that the element of time required in which to digest a given amount is even more important with a meal of vaccine, hypodermatically administered, than with one of beefsteak fed in the ordinary way, since, should the previous meal not be out of the way, the tissues would certainly be subjected to more bacterial substance at once than that contained in the last dose, and the patient suffer the effects of overdosage, parenteral indigestion, previously referred to.

PRACTICAL GUIDES

Having considered the general principles involved, we may now turn to the actual practice of vaccine therapy. Premising that we have an autogenous vaccine, efficiently prepared, skilled selection of the organism from the patient's supply, controlled by smear and culture, and care in sterilization of vaccine so as not to destroy the specific nature of the bacterial protoplasm through the employment of too much heat, we should first look for proof that the organism constituting the vaccine is at least active in, if not entirely responsible for, the lesions that we are to attempt to heal. Any individual becomes what is called sensitized to an infecting organism soon after it or its products gain access to the general circulation, and as this means that his lymph contains newly developed (as previously explained) enzymes peculiarly adapted to the disintegration of the special bacterial protoplasm involved, no sooner does such protoplasm find its way into his tissues than it is attacked and more or less completely digested. The symptoms arising from this process depend directly on the activity and quantity of such enzymes that may be available, no less than on the quantity of bacterial matter introduced. If these two factors are so related that immediate and complete disintegration of the bacterial matter takes place, no symptoms whatever occur. But if the digestive process proceeds relatively slowly, as with our gastro-enteric digestion of albumin, through albumose and peptone to amino-acid, the poisonous action of the intermediate products shows itself in symptoms of inflammation at the point of introduction (local reaction); in fever, increased pulse rate and malaise generally (constitutional reaction), and in increased congestion and cellular activity at the foci of disease (focal reaction). Here we should especially note that no symptoms would be produced by the *first*, or perhaps the first two or three, injections of strange bacterial protoplasm (soluble toxins, as of the diphtheria or tetanus bacillus, are not included), as contradistinguished to what may be called familiar bacterial protoplasm, but that if such injections were continued, even of non-pathogenic bacteria (as proved by Thiele, Embleton and others), the individual would become sensitized just as he does in the course of an infectious disease, and all three varieties of reaction would develop. For these reasons a focal reaction following the first, or at least the second or third dose is particularly to be desired and watched for as convincing proof of the culpability of the organism constituting the vaccine in use. Of course, careful note should be made of any local or any constitutional reaction (which, with the same reservation, are also pathognomonic) as both corroborative of the first and as indicative of the strength of the body's response.

In default of any such reactions, even after the third dose, local and constitutional responses cannot be taken as diagnostic, nor even a focal one, unless it be so distinct and apart from a general disturbance as to exclude the possibility that it might be due only to the general sensitization to the vaccine plus the increased irritability shown by any inflamed tissue.

Of course, since a reaction of any sort presupposes a certain amount of resistance, there will be found individuals whose specific response is so slight (notably in some cases of acne) that it is only with much difficulty that any reaction whatever can be obtained. While this state explains the original development of the malady and the failure of automatic cure, it is very difficult to deal with and markedly points to the limitations of active immunization — we can supply the specific stimulus, but as yet have to leave the response to the body. Abnormally low temperature (mouth) is often a concomitant, if not an actual indicator of this condition, and after an injection of vaccine it frequently falls and remains still lower for days and even weeks.

Before giving a first injection of vaccine we should have record of both the patient's daily range of temperature and of pulse, so that we may judge how the vaccine acts in these particulars. The temperature (morning and afternoon) record should be kept up

during the entire course of treatment, and the pulse rate recorded just before each injection and at the height of any reaction that may occur. Needless to say, written record should be made of the amount of vaccine injected and the character, extent and duration of all reactions following.

As regards the size of the first dose, although each case must be a law unto itself, depending principally on the danger of inducing a painful or a debilitating reaction, either on account of the location or the extent of the pathologic process, it is rare that one smaller than 100 million organisms need be given. If no reactive response or no prolonged lowering of temperature results by the end of a week, a 25 per cent. increase may be given, and so on for three or four periods; but just as soon as the slightest sign of reaction is apparent the same dose must be repeated, over and over again if necessary, till it ceases to elicit noticeable response, which will be when the special enzyme produced is plentiful and powerful enough immediately and completely to reduce the bacterial protoplasm, as previously explained. After the fourth dose, or after a repeated dose, fails to elicit a reaction, the increase should never be greater than 10 per cent. A prolonged depression of temperature indicates, as stated, deficient reactive ability, and should be met by a reduction of at least 90 per cent. in the size of dose and a subsequent increase of not over 10 per cent. each time whenever the temperature retains its level in accordance with the general rule given above. The interval between doses should never be less than a week (possibly better results could be obtained with two weeks), since, besides avoiding cumulative overdosage, we must give any increased specific resistance developed time in which to act on the organisms in the focus of infection, else we shall lose at least early improvement, which will be much interfered with if we use up all or most of the new enzymes with dose on dose following in too rapid succession.

As to the place of injection: It is to be remembered that our object is to secure the aid of the as yet unaffected body cells in the production of antibodies, and as a hypodermic dose of vaccine in the arm, for instance, exerts its main stimulating influence on the tissues in the immediate neighborhood and along the lymphatics to and including the nearest chain of glands, and as the immunity and therefore special enzyme formation persisting over this area at the end of a week or more is certainly greater than that in the normal tissues elsewhere, the next dose should certainly be placed accordingly—in as new a field as may be available. I therefore suggest that, besides the arms, the thighs be used, so that even the same lymphatic chain would not be restimulated more than once every four weeks. It has been demonstrated that an intraperitoneal injection of a given dose of vaccine in animals subjected to the experiment has a much greater immunizing power than when administered anywhere else. This is undoubtedly due to the fact that here opportunity exists for contact with the greatest number of the cellular elements of inflammation — the main antibody producers—so that the given plan, as it widens the area of subcutaneous dosage, tends to a similar effect and result.

In a suitable case, if we follow out the foregoing rules, we are almost certain to obtain improvement after ten or twelve injections, and when this improvement has nearly reached cure we should stop all vaccine, at least for a month or two, since improvement is usually particularly marked just after the arrest of a course of appropriate vaccine therapy—a further indication of the necessity of avoiding too short intervals between doses.

DIABETES MELLITUS TREATED WITH FLUID CULTURES OF THE LACTIC ACID BACILLUS

REPORT OF FOUR CASES

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Several references[1] have recently been made in medical literature to the successful treatment of diabetes mellitus by the administration of the lactic acid bacillus. It is desirable that the effects of this therapeutic agent should be confirmed; with this idea in mind, four patients were given the treatment.

The first three were observed at Gouverneur Hospital, service of Dr. John H. Huddleston. They were kept on a constant weighed diet for a considerable period before the treatment was begun. This diet was constituted as follows:

Breakfast: Three ounces of bacon; 2 eggs; 1 ounce butter; 1 ounce cheese; tea or coffee, with 2 ounces cream.

Midday: Ten ounces clear soup; 3 ounces lean meat; tea, without cream; 1 ounce cheese; 4 ounces vegetables (asparagus, beet-greens, cabbage, cauliflower, cucumbers, eggplant, lettuce, rhubarb, spinach, string beans, tomatoes or vegetable marrow).

Evening: Tea or coffee with 2 ounces cream; 3 ounces ham; 2 eggs; 1 ounce cheese; 1 ounce butter.

This diet is equal to a carbohydrate intake of 15 gm. Where the tables indicate a larger intake, the increased carbohydrate is in the form of white bread.

Continuing on the same diet, the patients were then given the lactic acid bacillus solution, the idea being to note any effect the medication might have on the disease as compared with the control periods. The subjects of these observations were kept in the same ward under the care of the same nurse. While in the hospital the urinary examinations were all made by one man. For the quantitative determination of glucose, Benedict's modification[2] of Fehling's method was used; for the qualitative demonstration of acetone, Legal's test; for diacetic acid, Gerhardt's ferric chlorid reaction.

Two of these three patients were treated in the metabolism division of the Vanderbilt Clinic, both before and after treatment at the hospital, and thus afforded additional data for observation. One of the three died while under treatment.

The protocol of a fourth case has been given me by Dr. H. O. Mosenthal.

PROTOCOLS

CASE 1.—H. B., man, aged 38, born in the United States. In 1910, three and one-half years previous to his admission

1. Beveridge, J. W.: Diabetes Treated with Lactic Acid Bacillus, New York Med. Jour., 1913, xcviii, 70. Blodgett, S. H.: Glycosuria and the Bulgarian Bacillus, Med. Rec., New York, 1913, lxxxiii, 1071. Horowitz, P.: The Action of Lactic Acid Bacilli on the Percentage of Glucose in the Urine of Diabetics, ibid., 1913, lxxxiii, 142; 1912, lxxxi, 468.

2. Benedict, S. R.: The Detection and Estimation of Glucose in Urine, THE JOURNAL A. M. A., Oct. 1, 1911, p. 1193.

to Vanderbilt Clinic, began to complain of great thirst and hunger, loss of flesh and strength. At that time he was circumcised on account of great itching under the foreskin. After the operation examination of the urine showed sugar. The patient was put on a moderately restricted diet by his physician, but did not improve; he lost weight, from 207 pounds in 1909 to 114 pounds in January, 1914, when he was admitted to Vanderbilt Clinic. From January 26 until April 20 he showed considerable improvement under dietary restrictions. April 29 he was admitted to Gouverneur Hospital and placed on the constant diet already quoted. The observations from May 8 to 15 serve as a control period, to contrast with the lactic acid bacillus period beginning May 15.

TABLE 1.—RECORD OF URINE ANALYSES IN CASE 1

Date, 1914	Urine in 24 hours: Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	Fluid Culture, Lactic Acid Bacillus
5/ 8	1,200	2.9	35	35	0	0	0	None
5/ 9	720	2.6	19	35	+16	0	0	None
5/11	1,020	2.27	23	35	+12	0	0	None
5/12	1,200	2.4	28	35	+ 7	0	0	None
5/14	1,680	2.1	35	35	0	0	0	None
5/15	1,020	2.7	28	35	+ 7	0	0	10 c.c. t.i.d.
5/17	1,650	2	33	35	+ 2	0	0	10 c.c. t.i.d.
5/18	1,500	1.7	25	35	+10	0	0	10 c.c. t.i.d.
5/19	840	3.1	26	35	+ 9	+	0	10 c.c. t.i.d.
5/20	1,470	3.33	49	35	—14	0	0	10 c.c. t.i.d.
5/21	1,020	2.4	24	35	+11	0	0	10 c.c. t.i.d.
5/22	900	2.6	23	35	+12	0	0	10 c.c. t.i.d.
5/23	720	2.9	21	35	+14	+	trace	10 c.c. t.i.d.
5/24	1,200	3.8	45	35	—10	0	0	10 c.c. t.i.d.
5/25	1,530	2.7	41	35	— 6	0	0	10 c.c. t.i.d.
5/26	1,680	2.5	42	35	— 7	0	0	10 c.c. t.i.d.
5/27	1,020	2.27	23	35	+12	0	0	10 c.c. t.i.d.
5/28	1,260	2	25	35	+10	trace	0	10 c.c. t.i.d.
5/29	1,320	2.17	28	35	+ 7	trace	0	10 c.c. t.i.d.
5/30	1,560	2	31	35	+ 4	+	+	10 c.c. t.i.d.
5/31	1,320	2.6	34	35	— 1	+	0	10 c.c. t.i.d.
6/ 1	1,680	2.5	42	35	— 7	+	0	10 c.c. t.i.d.
6/ 2	1,500	.7	10	15	+ 5	+	+	10 c.c. t.i.d.
6/ 3	1,950	.4	8	15	+ 7	+	0	10 c.c. t.i.d.
6/ 4	1,860	0.0	0	15	+15	+	0	10 c.c. t.i.d.
6/ 5	1,380	0.0	0	15	+15	+	0	10 c.c. t.i.d.
6/ 6	1,980	0.0	0	15	+15	+	+	16 c.c. t.i.d.

CASE 2.—A. S., man, aged 23, Russian, cutter by occupation, was perfectly well until September, 1913, when sugar was found in the urine during an examination for life insurance. Soon afterward he began to feel weak, to pass a great deal of urine, and to have an excessive appetite. There was also some pruritus, dryness of mouth and obstinate constipation. He did not lose much weight. His physician at that time gave him fluid culture of lactic acid bacillus for two weeks, without improvement; later he spent a few weeks in Roosevelt Hospital, where he felt better on a restricted diet. From February 9 until April 28 this patient attended the Vanderbilt Clinic, with only moderate improvement in his condition. April 28 he was admitted to Gouverneur Hospital. Table 2 gives the result of the observations in his case.

CASE 3.—D. B., man, aged 42, born in Holland, electrician, was brought by ambulance to the hospital in a semiconscious condition, supposed to be suffering from alcoholism. He was at first very weak and listless and could be made to talk only with difficulty; also his statements were contradictory. From what he said it appeared that he had not known that he had diabetes, but that for eight months he had noticed that he passed a great deal of urine, was very thirsty, had a voracious appetite, and had grown progressively thinner and weaker. He had been much troubled by boils in different parts of his body. This patient was in the hospital during the entire period of observation. The diet was begun April 16; the control days are tabulated beginning May 7, on which date the patient had improved sufficiently to be out of bed.

CASE 4 (Dr. Mosenthal's case).—G. B., clergyman, aged 52, refused to give a detailed history, saying it was of no interest whatsoever. The following facts, however, could be obtained: Three years before the present data were obtained the urine could be rendered sugar-free on green days, but by no other diet; traces of acetone and diacetic acid were present. Since that time the disease has made rapid progress, especially when the age of the patient is considered.

TABLE 2.—RECORD OF URINE ANALYSES IN CASE 2

Date, 1914	Urine in 24 hours: Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	Fluid Culture, Lactic Acid Bacillus
5/ 6	1,680	1.4	23	35	+12	0	0	None
5/ 7	2,100	1.6	33	35	+ 2	0	0	None
5/ 8	1,890	1.4	26	35	+ 9	0	0	None
5/ 9	2,040	1.9	38	35	— 3	0	0	None
5/11	2,520	2.5	63	35	—28	0	0	None
5/12	1,200	2.6	31	35	+ 4	0	0	None
5/14	2,490	2.7	67	35	—32	0	0	10 c.c. t.i.d.
5/15	2,280	2.08	47	35	—12	0	0	10 c.c. t.i.d.
5/17	2,400	2.27	54	35	—19	0	0	10 c.c. t.i.d.
5/18	2,850	2.27	64	35	—29	0	0	10 c.c. t.i.d.
5/19	2,400	2.6	62	35	—27	+	0	10 c.c. t.i.d.
5/20	2,280	2.8	63	35	—28	+	0	10 c.c. t.i.d.
5/21	2,130	2.6	55	35	—20	0	0	10 c.c. t.i.d.
5/22	2,520	2.5	63	35	—28	0	0	10 c.c. t.i.d.
5/23	2,760	2.7	74	35	—39	+	0	10 c.c. t.i.d.
5/24	1,500	3.1	46	35	—11	+	+	10 c.c. t.i.d.
5/25	2,400	2.9	69	35	—34	0	0	10 c.c. t.i.d.
5/26	1,680	2.5	42	35	— 7	0	0	10 c.c. t.i.d.

TABLE 3.—RECORD OF URINE ANALYSES IN CASE 3

Date, 1914	Urine in 24 hours: Volume, c.c.	Glucose, Per Cent.	Glucose, Gm.	Carbohydrate Intake	Carbohydrate Balance	Acetone	Diacetic Acid	Fluid Culture, Lactic Acid Bacillus
5/ 7	2,700	2.8	75	35	—40	+	+	None
5/ 8	2,250	3.1	69	35	—34	+	+	None
5/ 9	2,100	3.3	69	35	—34	+	+	None
5/11	1,920	4.5	86	35	—51	+	+	None
5/12	1,920	2.6	59	35	—24	+	+	None
5/14	1,380	3.8	52	35	—17	+	+	None
5/15	1,140	3.1	35	35	0	+	+	16 c.c. q.d.
5/17	960	3.8	36	35	— 1	+	+	16 c.c. q.d.
5/18	1,440	3.8	55	35	—20	++	++	16 c.c. q.d.
5/19	1,080	3.5	37	35	— 2	+	+	16 c.c. q.d.
5/20	1,020	3.1	31	35	+ 4	++	++	16 c.c. q.d.
5/21	1,080	3.1	33	35	+ 2	++	+	16 c.c. q.d.
5/22	900	2.7	24	35	+11	+	+	16 c.c. q.d.
5/23	?	3.1	..	..	....	+++	+++	16 c.c. q.d.
5/24	600	4.1	24	35	+11	+++	++	16 c.c. q.d.
5/25	1,560	3.3	51	35	—16	+++	+++	16 c.c. q.d.
5/26	900	2.9	26	35	+ 9	+++	++	16 c.c. q.d.
5/27	1,230	2.9	36	35	— 1	++	++	16 c.c. q.d.
5/28	1,410	3.5	49	35	—14	+++	++	16 c.c. q.d.
5/29	1,230	3.8	46	35	—11	++	++	16 c.c. q.d.
5/30	690	4.5	31	35	+ 4	+++	+++	16 c.c. q.d.
5/31	1,680	5.5	92	75	—17	++	++	16 c.c. q.d.
6/ 1	1,950	4.5	87	75	—12	++	++	16 c.c. q.d.
6/ 3	1,140	3.3	38	35	— 3	++	+	16 c.c. q.d.
6/ 4	1,260	2.5	31	35	+ 4	+	+	16 c.c. q.d.
6/ 5	1,100	2.7	32	35	+ 3	+	+	16 c.c. q.d.
6/ 6	1,050	3.1	33	35	+ 2	+	+	16 c.c. q.d.
6/10	960	2.9	27	35	+ 8	+	+	16 c.c. q.d.
6/11	720	3.33	24	35	+11	+	+	16 c.c. q.d.
6/13	1,440	0	0	35	+35	0	0	16 c.c. q.d.
6/14	1,320	0	0	35	+35	0	0	16 c.c. q.d.
6/19	*							

* Patient died.

COMMENT

In Case 1, during the control period of five days, there was an average daily carbohydrate balance of 7 gm. of glucose; during the following seventeen days, when the lactic acid bacillus culture was administered, the balance was reduced to 3.2 gm. This is so trifling a change for the worse that it may be concluded that

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in this case the medication produced no result. The same may be noted in regard to the slight increase in acetone and diacetic acid.

On the other hand, an immediate beneficial effect is seen to follow the reduction of the carbohydrate intake from 35 to 15 gm. The glycosuria dropped to zero and stayed there, the carbohydrate balance remaining at plus 15. In two days a simple, slight dietary restriction accomplished what the lactic acid bacillus solution failed to do in seventeen days.

The sugar tolerance in Case 2 diminished slightly, and traces of acetone appeared, while the patient was taking the treatment. As in Case 1, only trifling changes for the worse were noted. The course of the disease may be considered to have been unaffected by the treatment.

Case 3 was the most severe of the three cases. The urine showed an acidosis practically all the time the patient was under observation. June 13 there was a sudden change in the urinary findings. The sugar and acidosis disappeared and the patient remained sugar-free for the next six days, when he died; but the acidosis reappeared during the last three days. Coincident with the changes in the urine, the patient's general condition grew rapidly worse. He went to bed and stayed there, lost his appetite and became very weak. His weight dropped from 97 to 87 pounds. He died in diabetic coma after being unconscious for six hours. The disappearance of the sugar and acidosis cannot be regarded as anything but an antemortem change in metabolism such as is often seen in such cases, and not a change for the better. The development of coma points to a lack of improvement.

It was expected that there would be an improvement in the general condition of these patients during the first part of their stay in the hospital, on account of the rest, strict dieting and more regular life brought about by hospital routine. After this improvement was established, the lactic acid bacillus treatment was begun and continued for a considerable period. No improvement could be observed during this treatment, clinically or in the urinary examinations.

The methods used in the determinations in Case 4 were those yielding accurate results: for glucose, Benedict's modification of Fehling's test; for total nitrogen, the Kjeldahl procedure, and for ammonia, Folin's method. The lactic acid bacillus medication was followed conscientiously for a month. During that period no marked variation for the better or worse occurred in the glucose tolerance, as evinced by either the glycosuria or the glucose-nitrogen ratio. If any change could be noted it was that the disease was more marked rather than ameliorated. The same holds true of the acidosis as shown by the ammonia figures, both absolutely and those of the percentage of ammonia nitrogen of the total nitrogen. In contrast to this, the figures of January 11 and 16 show that an oatmeal diet in a severe case of diabetes of this kind can accomplish more in therapy than the lactic acid bacillus.

All the urinary analyses cited are taken from days having similar dietary restrictions. The lactic acid bacillus period shows no improvement over the control day, January 11, nor does the following period, April 5, give any evidence that the course of the disease has been favorably influenced.

TABLE 4.—RECORD OF URINE ANALYSES IN CASE 4

Date, 1913	Urine in 24 hours: Volume c.c.	Specific Gravity	Reaction	Glucose, Per Cent.	Glucose, Gm.	Total Nitrogen, Gm.	Ammonia,* Gm.	Per Cent. Ammonia Nitrogen of Total Nitrogen	Glucose-Nitrogen Ratio	
1/11	3,000	1.028	Acid	2.5	75.0	21.8	2.6	9.9	3.5:1	Second of 2 green days†
1/16	2,940	1.017	Acid	1.0	29.4	14.2	0.6	4.4	2.1:1	Second of 2 green days
2/15	2,340	1.025	Acid	2.2	51.5	14.5	1.8	10.7	3.6:1	Green day following strict day‡
2/22	3,000	1.023	Acid	2.4	72.0	18.6	2.1	9.4	3.9:1	Green day following strict day
3/8	3,120	.....	.....	2.9	88.9	20.6	2.4	9.8	4.3:1	Green day following strict day
4/5	4,140	1.020	Acid	1.8	74.5	16.1	3.2	16.4	4.5:1	Green day following oatmeal day

* The qualitative reactions for diacetic acid (Gerhardt's reaction) and acetone (Legal's test) were of maximum intensity throughout. Sodium bicarbonate was administered during the period of observation. The dose of this drug, however, was constant, and therefore would affect the ammonia output equally on each day, and would not invalidate comparative values.

† A period of three oatmeal days followed the specimen of January 11; the diminished output of glucose and ammonia, January 16, are evidence of the benefit derived therefrom.

‡ From February 8 to March 9, 16 c.c. of the fluid culture of lactic acid bacillus was given three times a day.

CONCLUSION

The conclusion drawn from these four carefully observed cases of diabetes mellitus is that no improvement was effected by the administration of the fluid culture of the lactic acid bacillus either as to the glycosuria or the acidosis.

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The Phenomena of Sleep.—We are never unconscious during sleep; in sleep we have a transformed consciousness. Instead of the relation of the ego to his environment being maintained, as it is during waking hours, we have a complete change, in which the ego goes through thinking processes, but without the same feelings of relativity. Unquestionably thought continues; the direction of thought is altered. There is in dream consciousness hardly any, if any, effort to control the thoughts. The thoughts very largely control themselves. Our conscious life ought to consist of a continuously controlled and directed stream of thought by association. But in dream consciousness the thought is completely uncontrolled, and it is all done by spontaneous association. The attention is diffused and dim, extending over a very wide field, instead of a small and well-illuminated one. —H. Crichton Miller, *Medical Press and Circular*.

THE EFFECT OF GRAVITATION ON THE PRESENTATION AND POSITION OF THE FETUS

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The presentation of the head of the fetus at the uterine outlet, at the time of birth, is so common and offers so comparatively easy a delivery, that since the earliest times it has been called the normal presentation. The statistics collected by Schroeder,[1] including several hundred thousand cases, give 95 per cent. of vertex presentations, and Pinard[2] gives about the same figures. These findings are for all periods of pregnancy; but if full term cases alone are considered, about 97 per cent. present the occiput. About 70 per cent. of the vertex presentations occur in the left, and 30 per cent. in the right position. Naegele[3] first pointed out that the vertex is usually directed anteriorly in left and posteriorly in right positions, so that the presenting part is usually found at one or the other extremity of the right oblique diameter of the pelvis.

The great frequency of cephalic presentations at the end of pregnancy was recognized by Hippocrates, but he believed that the child presented by the breech up to the seventh month, and then turned over and presented the head. This turning over at the end of the seventh month has been known as "The fetal somerset" of Hippocrates. But the more frequent examination of pregnant women has demonstrated the error of this idea, so that since the time of Smellie[4] and Baudelocque,[5] it has been generally believed that head presentations predominate throughout pregnancy. For many years it was considered that the presentation once determined was permanent, but in 1861 Hecker[6] and others demonstrated that it is not unusual for changes in presentation to occur even in the latter months of pregnancy. It has also been shown that these changes are usually from some other to the cephalic presentation, and that the presentation becomes more stable the nearer full term is approached.

Many theories have been advanced to account for the prevalence of head presentations, and spirited controversies have occurred between their advocates. These theories fall into three groups, namely, the gravitation theory, the theory of mutual accommodation between the fetus and the uterine cavity, and a group of theories which have been put forward in the belief that the fetus determines its presentation by its own active movements. The first two are the leading theories at present.

The gravitation theory, first mentioned by Aristotle,[7] attributes the dependent position of the head to the greater weight of that part. Perhaps the most notable advocate of this theory has been James Matthews Duncan,[8] although Veit,[9] Smellie,[4] William Hunter,[10] and others have also supported this view. Duncan showed that if a recently dead full term fetus, that had not breathed, be bound with threads so as to be retained in the intra-uterine habitus, and put into salt solution of about its own specific gravity, it floats obliquely with the head down and the right side lower than the left. He also separated the head from the body and found that it had a specific gravity of about 1.060, while the body had a specific gravity of about 1.050, thus clearly demonstrating the greater specific gravity of the cephalic part of the fetus, while the lower position taken by the right side of the fetus showed that the center of gravity of the whole fetus lay to the right of the midline. Veit[9] and numerous others have duplicated these observations.

Duncan[8] also clearly described the manner in which the gravid uterus is supported. In the erect subject it lies forward on the anterior abdominal wall and is inclined at an angle of about 30 degrees to the horizon, and when the woman is in dorsal decubitus it is not horizontal, but lying back on the posterior abdominal wall and brim of the pelvis it forms an even greater angle with the horizon. Thus the os is the lowest part of the uterus in all ordinary positions of the woman except the lateral recumbent.

Objections to the gravitation theory have been made by a number of able writers, among them Dubois,[11] Scanzoni,[12] and Sir James Simpson.[13] Simpson did some careful experiments with fresh fetuses, putting the fetus into a large vessel filled with water and allowing it to sink to the bottom. In such an experiment, he said, if gravitation is competent to account for cephalic presentations, it ought to cause the head of the fetus to fall first to the bottom of the vessel. He found, however, that, on the contrary, the fetus always turned on its back, and the region of the scapula first touched bottom. He therefore declared that the action of gravity would not tend to produce a cephalic presentation, but that the preponderance of that presentation was due to the accommodation of the fetal ovoid to the cavity of the uterus.

The findings of Duncan, taken together with a consideration of the general character of the anterior and posterior surfaces of the fetal ovoid, rather readily suggest the prediction of the results obtained in Simpson's experiment. For when the fetus is in the intra-uterine habitus, the posterior surface of the fetal ovoid, formed by the back of the trunk and the back of the anteflexed head, is a fairly regular convex surface, and such a surface offers a relatively small resistance when making its way through a body of water. On the contrary, the anterior surface of the fetal ovoid presents the anteflexed head and the four extremities so folded on the body as to form an irregular rather concave surface, such as in passing through water offers appreciable resistance. This difference in the resistance offered by the anterior and posterior surfaces of the fetus would tend to cause such a rotation as was noted in the experiment. The location of the center of gravity to the right of the midline and nearer the back than the front of the fetus, as asserted by Duncan, would also tend to produce the same rotation. The greater density of the head should cause it to fall

1. Schroeder, Oldhausen and Veit: Lehrbuch der Geburtshülfe, 1899, Ed. 13, p. 143.
2. Pinard: L'accommodation foetale, Traité du palper abdominal, Paris, 1878, Ed. 2, 1889.
3. Naegele: Die Lehre vom Mechanismus der Geburt, Mainz, 1838, p. 10.
4. Smellie: A Treatise on the Theory and Practice of Midwifery, Edited with Annotations by Alfred H. McClinlock, London, 1876, i, 179-184.
5. Baudelocque: L'art des accouchements, Paris, 1789, Ed. 2.
6. Hecker: Klinik der Geburtshülfe, Leipzig, 1861.
7. Aristotle: De Generatione animalium, Book 14, Chapter IX, in Harles: Neurologiae primordia, Paragraphs 5-16.
8. Duncan, James Matthews: Researches in Obstetrics, Edinburgh, 1868.
9. Veit, G.: Die Langenverhältnisse bei Früh- und Zwillingsgeburten, Scanzoni's Beitr., 1860, iv, 279.
10. Hunter, William: The Gravid Uterus, Rigby's Edition. Duncan, Researches in Obstetrics.
11. Dubois, M.: Mémoire sur la cause des présentations de la tête, Mém. de l'Acad. Roy. de Méd., 1833, ii.
12. Scanzoni: British Med. Jour., March 17, 1866.
13. Simpson, Sir James: Edinburgh Month. Jour. Med. Sc., January, 1849; Obstetric Mem. and Contributions, Phil., 1856, ii, 88.

a little faster than the other parts of the fetus, were it not for its attachment to the rest of the body. Thus the cephalic end of the fetus should slightly anticipate the other end in its arrival at the bottom of the vessel, and the fetus should move through the water back foremost, both of which it evidently did.

Probably the ablest opponent of the gravitation theory is Schatz.[14] In 1900 he made criticisms of Duncan's work which do not seem to have been met. Schatz stated that by following Duncan's method of procedure.

"The interesting observation was made, that fetuses of the first months of pregnancy swim with the head up and the rump end down. But the difference between the ends becomes less as pregnancy proceeds, and that at the sixth or seventh months of pregnancy the fetus swims horizontally, later toward the end of pregnancy with the head lower than the rump, and at the end of pregnancy the fetus swims with the long axis perpendicular." He remarks that: "These experiments remind one of 'the fetal somerset' of Hippocrates," which was the turning of the child from a buttocks to a cephalic presentation supposed to occur at about the seventh month; "also the experiments seem to give a very pretty explanation of the more recent observations, that toward the end of pregnancy the presentation becomes more constant and established. And yet," he went on to say, "The whole theory and its application are false; because in a body whose parts are of various densities, there is no fixed point on which the body will balance when immersed in solutions of different specific gravities."

He illustrates this point as follows:

"If one take a body, for example a cube of one cubic centimeter volume with a specific gravity of 3, together with another cube of the same size but of a specific gravity of 4, and join them together to form a rectangular body, the heavy-point of the system of seven grams is at a point three sevenths of the distance from the center of the four gram cube toward the center of the three gram cube, when the body is in the air. If now the body should be put into water, each cube would displace one cubic centimeter of water, which weighs a gram, then the heavier cube would weigh three grams and the other two grams, and the heavy-point would be two-fifths of the distance from the center of the heavier cube toward the center of the lighter cube. If, again, the body should be placed in a solution of a specific gravity of 2, then each cube would displace two grams of the solution and the heavier cube would weigh two grams and the lighter cube one gram, and the heavy-point would be one-third of the distance from the center of the heavier cube toward the center of the lighter cube. Thus the greater the specific gravity of the solution in which the body is suspended, the nearer the heavy-point approaches the center of the heavier cube," or differently stated, the position of the heavy-point of such a body is dependent on the specific gravity of the solution in which it lies.

In the experiment of suspending the fetus in a solution of its own specific gravity, about 1.050, natural conditions are not reproduced, for the liquor amnii has a specific gravity of only 1.006 to 1.008, and the heavy-point of the fetus lying in it is not the same as it is in the heavier solution. To determine the effect of gravity on a fetus suspended in a solution of the specific gravity of the liquor amnii, Schatz proceeded as follows: He took a fresh full-term fetus, which had not breathed, and to each end of its long axis he attached a cord, the other end of which was attached to the pan of a good balance. The fetus was then lowered into the salt solution (specific gravity 1.008), and the length of the cords so adjusted as to bring the long axis of the fetus parallel to the beam of the balance. When these conditions had been established, the pelvic end of the fetus was found to sink to a lower position than the cephalic, and it was found possible to measure the excess weight on the pelvic side of the balance by putting weights in the pan on the other side. In consequence of this finding, Schatz declares that the experiments of Duncan prove nothing with regard to the statics of the fetus in a fluid of the specific gravity of the liquor amnii. The experiment has been verified by Williams[15] by putting the fetus suspended as above into a solution of its own specific gravity, when the head sinks as in Duncan's experiment, and then gradually diluting the solution to a gravity of 1.008. During the dilution the fetus slowly assumes the horizontal position, and then as the dilution progresses, the buttocks sink to the lower position.

The conclusion drawn from these experiments, that so far from being a factor in determining the cephalic presentation, the action of gravity if unopposed would regularly produce a breech presentation, is such a remarkable contradiction of the findings of Duncan, that a study has been made to determine if possible the correctness of the conclusion.

Experiments were conducted as follows: The fetus was bound with small cord so as to be retained in the intra-uterine habitus, and then put into a salt solution, the specific gravity of which was so adjusted that the fetus was freely suspended in it. The experiments of Duncan were thus duplicated, and the specific gravity of the solution was taken as the specific gravity of the fetus. If the solution were diluted, of course the fetus would fall to the bottom. To prevent this, the fetus was suspended by the use of a long balance beam with a cord hanging from each end. These cords were attached to the fetus much as described by Schatz, but instead of the cords being attached to the ends of the long axis of the fetus, they were attached to the ends of that transverse axis on which the fetus balanced, in the air, with the long axis horizontal. With such an arrangement one would expect that, whatever the specific gravity of the solution into which the fetus was lowered, a disproportionately large part of the weight of that part of the fetus having the lower specific gravity would be borne by the solution, and that in consequence the opposite end of the fetus would sink. Such was found to be the case. The observations were as follows:

EXPERIMENT 1.—A 5-months fetus was freely suspended in a solution of a specific gravity of 1.049. Neither end tended to sink to a lower position than the other.

EXPERIMENT 2.—A premature child, which had breathed, was freely suspended in a solution of the specific gravity of 1.046. Neither end tended to a lower position than the other, but the right side took a lower position than the left whatever the initial position in which it was placed.

EXPERIMENT 3.—A fresh full-term fetus, weight 2,530 gm., specific gravity 1.050, in salt solution took an oblique position with the head down, but neither side took a lower position than the other.

EXPERIMENT 4.—Of a 5-months fetus, specific gravity 1.044, neither end tended to take a lower position than the other, but the body without the head took a vertical position with the head end downward. The specific gravity of the head was 1.041.

EXPERIMENT 5.—In a 6-months fetus, of specific gravity 1.037, the specific gravity of the head was 1.041, that of the

14. Schatz: Ueber den Schwerpunkt der Frucht, Zentralbl. f. Gynäk., 1900, p. 1033.

15. Williams, J. W.: Obstetrics, 1909, Ed. 2, Chapter IX.

liver and limbs 1.047. Neither end of the fetus tended to take a lower position than the other, but the decapitated body was very decidedly inclined to lie on the right side.

EXPERIMENT 6.—In a male child, length 50 cm., the weight of the fetus was 2,485 gm., specific gravity 1.054; weight of the head 795 gm., specific gravity 1.056; weight of the body 1,690 gm., specific gravity 1.053. In salt solution the head end of the fetus went down and the right side was lower than the left. The fetus then was balanced as described above and when lowered into water it took a position like that which it took in the salt solution of its own density.

EXPERIMENT 7.—In a male child, length 50.5 cm., the weight of the fetus was 2,600 gm., specific gravity 1.051; weight of the head 810 gm., specific gravity 1.054; weight of the body 1,790 gm., specific gravity 1.050. It took a position in salt solution of its own density with the head nearly vertically downward and the right side lower than the left.

EXPERIMENT 8.—A male child, length 49 cm., weight 2,830 gm., was freely suspended in a solution of a specific gravity of 1.051 in which it took a position with the head nearly vertically downward and the right side lower than the left. It was then balanced as described before, and it then took a similar position when lowered into water.

The length of the long axis of the fetus, while in the intra-uterine habitus, was found to be 29 cm., and the transverse axis, on which the fetus balanced in the air, was found to be 15.5 cm. from the cephalic pole.

EXPERIMENT 9.—A full-term child 3 days old, weight 2,005 gm., floated in water with the head directly downward. The length of the long axis, when the body was bound in intra-uterine habitus, was 27 cm., and the transverse axis on which it balanced in the air was 14.5 cm. from the cephalic pole.

These observations almost exactly duplicate those reported by Duncan,[8] and when we review the findings we should bear in mind Duncan's warning that most of the early fetuses have been dead for some time before birth, and that in consequence decomposition is likely to have altered the relative densities of the parts, so that we may easily discount the variations in the findings made in examining the premature subjects.

If now we examine the data from the foregoing experiments together with the observations made by Duncan,[8] Simpson,[13] Schatz[14] and Williams,[15] the following conclusions will be found consistent with each observer's results:

1. The cephalic part of the fetus has a higher specific gravity than the body.

2. The center of gravity of the fetus, in intra-uterine habitus, is nearer to the buttocks end than to the cephalic end of the long axis.

3. The center of gravity of the fluid displaced by the fetal body is even nearer to the buttocks end than the center of gravity of the body itself.

As indicated, in the illustration given by Schatz, the heavy-point, as he calls it, of a system of two bodies of unequal specific gravity, moves along a line from the center of gravity of the system to the center of gravity of the denser body, as the specific gravity of the solution in which it lies is increased. This is due to the fact that, when two such bodies lie in a solution, a greater proportional part of the weight of the body, of the lower specific gravity, is supported by the fluid, and this disproportion becomes greater, the greater the specific gravity of the fluid. By the method of suspension used by Schatz, the effective support for the weight of the fetus is applied to the midpoint of the long axis, and his experiment shows that the specific gravity of the liquor amnii is not great enough to cause the heavy-point to move from the center of gravity of the fetus to the midpoint of its long axis, for the pelvic end takes the lower position. On the other hand, a solution which will support the fetus causes the heavy-point to move beyond the midpoint toward the cephalic pole, as is shown by the experiment of Williams. And in this movement of the heavy-point with the changing of the density of the solution, we find a complete explanation of the phenomena observed in Williams' experiment.

In my experiment the effective support for the weight of the fetus was applied to its center of gravity. The support was thus applied to the heavy-point, and immersion of the fetus in any fluid, not dense enough to float it, would cause the heavy-point to move from the point of support toward the heaviest part of the body, the head, with a resulting depression of that part, as was observed.

In view of these conditions, shall we say that the effects of the action of gravity is rather to produce a breech presentation than a cephalic? In both experiments with the lighter solutions, mechanical supports were used, and the results obtained were determined by the point of application of the support.

It is pertinent to recall that the center of gravity of the fetus was found to be nearer the pelvic end[14] and about 1 cm. from the midpoint of the long axis, so that if the point of support be moved even 1 cm. from the midpoint toward the larger end of the fetal ovoid, the action of the amniotic fluid, due to gravity, would cause the head to sink to the lower position. But would we not make a rather unreasonable supposition in supposing that the fetus during its intra-uterine existence has a mechanical support acting on any single point?

It may be helpful at this point to inquire just how great the effective weight of the fetus is when lying in the amniotic fluid, and how that weight is distributed. The specific gravity of the fetus may be taken as 1.050, and that of the liquor amnii as 1.008. Then $1.050 : 1.008 :: 100 : x$, in which x equals the percentage of the weight of the fetus supported by the liquor amnii. $x = 96$ per cent. That is, only 4 per cent. of the weight of the fetus is unsupported by the fluid. In other words, in a 3-kg. fetus, the pressure exerted on the wall of the uterus by the fetus equals 4 per cent. of 3,000 gm., or 120 gm., equal to about 4 ounces. If in this fetus the head is found to have a specific gravity of 1.056, while that of the rest of the body is 1.048, then each cubic centimeter of the substance of the head will have, on an average, an unsupported weight equal to 1.056 gm. minus 1.008 gm., or 0.048 gm., and the body similarly will have an unsupported weight per cubic centimeter equal to 1.048 gm. minus 1.008 gm., or 0.040 gm. Thus the effective weight of the head is one-fifth greater per volume than that of the body. As a result of this condition of affairs, it seems reasonable to expect that the head will fall to a lower position more rapidly than the buttocks part of the fetus, whenever any movement of the mother or fetus causes a separation, however small, between the fetal ovoid and the inclined slippery surface on which it lies. The fact, that in a fluid the denser of a group of bodies falls to the bottom of the container when the vessel is shaken, has been taken advantage of from prehistoric times in the panning of gold. The particles of gold collect on the bottom of the pan under the gravel even though the gravel stones are larger and heavier than the individual particles of gold. The denser body exerts a greater force per unit

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area on the fluid under it, particularly if the fall be short, and therefore more rapidly makes its way to the bottom. Other factors also come into play in the panning of gold, but when bodies of approximately the same size and shape are considered, the relative densities of the bodies is the major factor.

The supposition that, when the fetus falls through fluid, the head will fall the faster and gain the lower position, would seem to call for the very condition which Simpson[13] failed to find in his experiments. For he found that when the fetus falls through water, the head does not fall the faster and first reach the bottom, but that on the contrary the region of the scapula does it. But it should be remembered that, as a body gains velocity in moving through fluid, the shape of the body becomes a major factor in determining the order of precedence of its parts. However, in the first instant of its fall, the velocity is so small that the shape of the body exercises very much less effect. In consequence, repeated short falls may produce an effect on the relative positions of the parts of a body rather different from that produced in the same body by a single fall of the same total magnitude. Thus we seem to be warranted in expecting that the effect of gravity on the denser head of the fetus would be like that on the gold in the pan, and that it would cause the head to take the lower position unless mechanically hindered.

The note has been made by Schatz[14] that the relative specific gravity of the poles of the fetus changes with the advance of pregnancy, the relative specific gravity of the two poles in early pregnancy being the reverse of that found in the mature fetus. It must be borne in mind that most of the early fetuses available are open to the criticism, made by Duncan,[8] that they have been dead for some time before delivery, and that degenerative processes have changed the relative densities of their parts. In this connection, we should consider the practical unanimity of opinion among those who have opened the pregnant uterus post mortem, that the cephalic is the common presentation at all periods of pregnancy. Among these observers is Hohl,[16] who said:

> We have examined a series of unopened ova, and have always observed that the embryo reposing in the liquor amnii lies with the head lowest. We have in a considerable number of autopsies of pregnant women, not advanced to the seventh month, never once seen the breech lying lowest, if the corpse had not been disturbed.

Vesalius, Paré, Smellie,[4] Hunter,[10] Baudelocque[5] and Velpeau[17] are observers reporting similar findings. More recently Edgar[18] has stated that "it is well established that the head is generally lower than the breech, even from the very first formation of the liquor amnii."

During the earliest months of pregnancy, the relatively small fetus is enclosed with a considerable amount of fluid in a globular sac. As the fetus is heavier than the fluid, it lies on the lower wall of the sac, as soon as the umbilical cord has become long enough to allow it. As long as the uterus has the globular form, the fetus can hardly be said to have a presentation, for it slides readily over the lower wall of the amniotic cavity with the changes in position made by the mother, and the arciform contour of the body of the fetus determines its adaptation to the curved surface on which it lies. As pregnancy advances, the cavity of the uterus becomes somewhat elongated, but the body of the fetus, for some time still, fills the cavity so incompletely as hardly to allow the participation of any agent other than gravity in determining its position in the cavity. But as the fetus comes to fill the uterus more completely, the walls of the uterus restrict its movements, and become a potent factor in preserving a longitudinal presentation.

That the action of gravity is a factor in determining the anterior or posterior position of the occiput, in cephalic presentations, has been fully demonstrated by Schatz.[19] In 1904 he reported a very long series of observations made on women in the later months of pregnancy. He found that the left occipito-anterior position is more common in the evening after the mother has been up and around than in the morning at the time of arising, while the right occipitoposterior position is more frequent in the morning than in the evening. This phenomenon he attributes to the weight of the liver lying on the right side of the fetus, which, tending to the lower position, comes forward during the hours when the woman is erect and tends to go backward when she lies down. These changes in position most readily occur in multiparas, because in them engagement does not occur until the beginning of labor. The predominance of the left occipito-anterior position over the right occipitoposterior is readily accounted for by the relatively greater activity of the mother in the erect posture, compared with her inactivity when lying down, so that the frequent jarring while the mother is up and about causes a more ready change in the position of the fetus.

Thus Schatz satisfied himself that gravity is an active factor in determining the usual positions found in cephalic presentations. Yet, because of a mistaken interpretation of the results of his experiment, which results were primarily determined by the point of suspension of the fetus, he concluded that the cephalic presentation itself not only was not attributable to the action of gravity, but that the tendency of the action of gravity to produce a breech presentation must be counteracted by some other force. But his objections fall to the ground unless we suppose that the fetus, in the uterus, has a mechanical support acting on it, the resultant of which is applied at some point nearer the head than the center of gravity. Such a support does not exist. And in view of the slight rocking of the fetus in the uterus, by its own and the mother's movements, it seems reasonable to believe that the denser cephalic pole of the fetus, like the gold in the pan, will find the lowest part of the container. Thus we confirm Duncan's conclusions.

In the study of the effect of the action of gravity on the presentation, it has seemed pertinent to inquire whether any light might be thrown on the problem by a study of the conditions prevailing during pregnancy in the lower animals. The processes of human physiology are the outcome of a gradual evolution, and we find in the lower animals examples of some of the stages of that evolution, so that it would be rather remarkable to credit gravity with being an agent in

16. Hohl: Lehrbuch der Geburtshülfe, pp. 160-161. Duncan, Researches in Obstetrics.
17. Velpeau: An Elementary Treatise on Midwifery, Translated by Charles D. Meigs, Philadelphia, 1831, first American edition, p. 207; Philadelphia, 1838, second American Edition, p. 208.
18. Edgar, J. C.: Textbook of Obstetrics, Philadelphia, Ed. 2, 1904, p. 473.
19. Schatz: Die Ursachen der Kindeslagen, Arch. f. Gynäk., 1904, lxxi, 541.

bringing the heavier head of the fetus to the lower position occupied by the os uteri in the human subject, if in the four-footed animal, in which the os uteri is at the upper end of the uterine cavity, the action of gravity could not be found to assist in producing the habitual cephalic presentation, or at least did not have to be overcome in its production.

In the mare and the cow, the uterus resembles the human in type,[20] and cephalic presentations are the rule. The cornua of the uterus and the broad ligaments are attached to the dorsal wall of the abdominal cavity, and the uterus is in the upper part of the cavity when in the non-gravid state, but after the first of pregnancy the uterus is borne down by the weight of its contents so that it lies on the lower abdominal wall, and the cervix becomes its highest part.

The young of these animals come into the world with a much more advanced development of their limbs than does the human infant, and from the first they are able to run about. Again, the young animal has a head which is smaller in proportion to its body than is that of the human infant, so that we are in a measure prepared for the remarkable findings made by Ernst Bumm[21] in experiments with the fetuses of animals. He made experiments with fetuses of uniparous animals, after the manner followed by Duncan, and he found that when freely suspended in salt solution such fetuses take a position with the pelvic end lower than the head. This reversal of the relative specific gravities of the poles of the fetus, as compared to the condition found in the human fetus, coupled with a corresponding reversal of the positions of the os uteri, is remarkably consistent with the idea that the action of gravity plays a part in the production of the cephalic presentation both in human beings and in animals.

It may also be shown that the action of gravity tends to produce the normal position of the animal fetus. At birth the fetus normally presents with its convex back fitting into the curve of the mother's sacrum, that is, it has its back uppermost and its belly below.

A number of experiments were done with pig fetuses in various stages of development, and every one took a position with the belly side down, when placed in a salt solution of its own specific gravity.

CONCLUSIONS

I think it has been shown that the action of gravity contributes to the production of the cephalic presentation, and that the interpretation of Schatz' experiments was an error because of the manner in which the support was applied in those experiments. In support of the proposition that the action of gravity participates in the determination of the cephalic presentation, three main considerations have been brought forward:

1. The amount and distribution of the effective part of the weight of the fetus lying in the amniotic fluid.

2. The admitted contribution of the action of gravity to the production of the left occipito-anterior position, which is one of the most characteristic features of the cephalic presentation.

3. The very great probability that the action of gravity contributes to the production of the normal cephalic presentation and the normal position of the fetus in animals.

20. Williams, W. L.: Veterinary Obstetrics, 1909.
21. Bumm, Ernst: Grundriss zum Studium der Geburtshülfe, 1902.

The subject matter of this paper was submitted as a graduation thesis at the Yale Medical School in June, 1911. I wish here to acknowledge my indebtedness to the late Dr. Otto G. Ramsay, professor of obstetrics and gynecology, under whose guidance this work was done.

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THE NURSING INFANT

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The purpose of this paper is to offer some practical suggestions for the prevention and correction of those far too frequent nutritional disturbances of breast babies due to faulty feeding.

During the first few months of infancy, there is probably more milk than at any other time during the nursing period, and the digestive system of the infant is less developed. If then, at 1 month there is as much milk as at 6, and a 6-months-old baby gets enough for proper nourishment, it is quite evident that the infant under 3 months is apt to overeat.

The infant stomach at 2 weeks holds about 1½ ounces, at 6 weeks 2¼ ounces, at 8 weeks 3⅓ ounces. By nursing every two hours, ten feedings in twenty-four, granting the baby will not take more than the normal stomach capacity (but he takes much more, for almost all infants eat till the stomach overflows), at 4 weeks old he receives 20 ounces in twenty-four hours.

The mother's weight, let us say, is sixteen times that of the baby. Then in the same proportion the mother would be taking 10 quarts of milk daily. I have weighed infants of between 2 and 4 weeks, before and after feeding, and in three minutes have found the stomach containing more milk than there should be after from fifteen to twenty minute nursings. The infant stomach is not emptied under two hours. Breast milk contains a much larger percentage of fermentative bacteria than cow's milk. Continually dilating a naturally delicate stomach, and mixing fresh food with fermenting residue, are almost certain to give rise to flatulent dyspepsia with all its accompanying distress. At 6 or 7 p. m. this discomfort is greatest, because of the day's accumulations.

This dyspepsia, which might be so easily prevented, manifests itself in either gastric or intestinal indigestion, or both, vomiting of sour or curdled milk, diarrhea or constipation, colic and loss of weight, and in many cases chronic indigestion which takes months of careful feeding to repair. The infant, a victim of physician, nurse, mother, grandmother or neighbor, "who has raised lots of babies," frets and whines most of the time. The mother, whose whole life is absorbed in the baby, is soon reduced to a nervous wreck, both physically and mentally, from worry, confinement and loss of sleep. This nervous condition imparts to the milk a disturbing element that no medicine can correct. And so the "vicious circle" is complete.

When the physician realizes this mutual disturbance, he must take a most positive stand and insist that the written instructions for mother and baby be rigidly carried out. The mother now becomes the patient. She must above all things have an abundance of sleep (if necessary, in a room apart from the baby), good nourishing food, rest and much exercise in the open air. A tonic must be given if necessary. Constipation must be corrected with cascara or some mild laxative. Her

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surroundings must be pleasant and there must be diversion and entertainment. I have often heard mothers say, "I have not been out of the house since the baby was born." In such cases, it is a good plan to give a 3 p. m. bottle, regardless of the age of the child. By so doing the mother may go out for some recreation without hurrying and worrying to be home at three. The milk will be much more abundant and of much better quality.

A mother worrying all day and staying awake all night cannot expect to secrete milk that will be a healthy food for her infant. It has been proved experimentally that a child, doing well on cow's milk, can be made sick when fed milk from the same cow after she has been fretted into a state of nervous exhaustion. Some babies may thrive on the stuffing plan, but it will be found that usually when a baby gains more than 8 ounces a week he does it at the expense of his digestion, and there is going to follow a period of indigestion with loss of weight. You will hear mothers say, "My baby is such a nervous baby." These babies for the most part have no constitutional nervous disease, but are simply nervous systems, impoverished with injudicious feeding, just as any other part of the body suffering with lack of nourishment. Improper feeding is not, of course, the sole source of trouble in infants. There are cases of constitutional diseases, or imperfectly developed digestive systems, that must be treated with appropriate drugs, combined with rational feeding.

When the father and mother are healthy, the mother leads a well ordered life, and the baby is normal at birth, by feeding every three hours from the beginning, at 6 and 9 a. m., at noon, and at 3, 6, and 9 or 10 p. m., depending on the mother's bed time, and once between 1 and 3 a. m., the baby will sleep and be happy and contented and gain systematically from 4 to 6 ounces a week, with satisfactory growth and development. This schedule does very well up to weaning time, provided the night feeding is discontinued after the third or fourth month. The mother will say that if she does not give the night feeding, the baby will cry. He certainly will cry, and cry hard too. But he can be trained to sleep from 9 p. m. to 6 a. m., provided the mother will not go to him when he cries. The nursings should be regular and the baby awakened on the minute and allowed to nurse until he falls asleep, or is satisfied. There are some dyspeptic babies who may do better on a four-hour schedule temporarily, and some premature or very weak infants on small feedings every two hours. The milk equilibrium is not usually established until about the sixth week, so one should not be discouraged too soon. Regular, strong nursings by a healthy infant can overcome many difficulties.

In the composition of the milk, aside from the nervous element, the fat and proteins are the only constituents apt to be at fault, and of these the fat content is usually the most variable and troublesome. Within the past year, I have found two cases in which the fat was about 1 per cent. In one of these, the baby cried almost constantly, and in the other the infant showed marked rickets. Three others showed 5, 7 and 8 per cent., respectively. In the latter cases the infants cried a great deal, and did not gain satisfactorily. The milk in every case was as far as possible the middle specimen. Cow's milk, cereals, red meat, exercise and fresh air, and plenty of sleep will almost always raise a deficient fat content, if it is not lower than 2 per cent. If a baby has colic after each feeding, is uncomfortable and sleepless, has facial eczema, or seborrhea of the scalp, vomits sour excoriorating mucus, has stools that smell sour and scald the skin and contain small easily mashed white particles intermingled with light green mucus, or has constipation with musty gray stools, the fat, assuredly, is too high. To reduce this fat excess is more difficult than to raise a deficient percentage. Fresh air and exercise, with a diet consisting of meat once daily, fruits, vegetables and liquid food but no alcoholic beverages, will accomplish much if the nursings are not too frequent.

Often the protein is the disturbing element, causing colic, constipation, or diarrhea with mucous stools containing tough, white curds in shape of bean- or peanut-like masses. Such a condition is usually found with mothers leading a sedentary life and eating much meat, eggs and highly seasoned food with a lack of fruit and vegetables.

In the foregoing are found the causes and, in a large measure, the prevention of colic, certainly one of the most distressing and annoying symptoms a physician is called on to treat. An attack of colic is unmistakable. The child cries violently, the abdomen is hard and distended, the knees are drawn up, and the hands and feet, which are never still, are cold from the intense intestinal congestion. The trouble may be either in the stomach, coming on soon after nursing, or in the intestines an hour or two later. Remembrance of this may help in relieving the infant. For the treatment of colic I have but little to suggest other than what I have already said about the mother's life and the nursing habits, for here certainly prophylaxis is better than treatment. Every mother knows all the mechanical remedies, such as hot applications, enemas, turning the baby over on his stomach, or holding him against her shoulder. It is often necessary to stop feeding entirely for twenty-four hours. Frequently, diluting the milk by giving water, lime-water, or barley-water, before nursing, helps. Nursing a few minutes and stopping a short while, or the use of the nipple shield may be beneficial. I have had some good results with peptonizing powder dissolved in warm water and given before each feeding. Carminatives, milk of magnesia, sodium bicarbonate, magnesium carbonate and bismuth subnitrate may often be used to advantage. In chronic cases, pulverized rhubarb or tincture of nux vomica sometimes gives relief. Sugar should never be used in the prescription for colic. Glycerin is a good substitute. In many cases the elimination of tomatoes, sour fruits and early vegetables from the mother's diet will prevent it. Where the condition has been long standing, improvement should not be expected to take place at once, for time must be allowed, both for the repair of the damage to the digestive tract, and more especially to the nervous system.

One of the commonest difficulties with which we have to contend is the quantity of milk. The indications of insufficient quantity are very definite. The breasts are flabby. When the baby nurses he never seems satisfied. Instead of nursing fifteen or twenty minutes and falling asleep, some fret and whine and pull at the nipple often for half an hour, while others give up entirely for a few minutes and then try again. The weight remains stationary or shows only a slight gain. There is no colic, no vomiting; the stools are scant, often with an olive-green tinge, and contain no

undigested food. However, unsatisfactory weight may be the result of overfeeding as well as underfeeding. It should be remembered, too, that weight fluctuations are common in infants, just as in adults; therefore, the food should not be changed until it has been found that for two or three weeks there has not been an average weekly gain of from at least 3 to 4 ounces. With an abundance of good nourishing food for mother, regular habits for mother and baby, and mixed feeding, if necessary, in underfed babies, we always expect favorable results.

Barring any constitutional conditions that may contra-indicate nursing, and any temporary derangement that may be treated symptomatically, the one most important factor in depleting the milk supply is the nervousness of the mother. The rules laid down above to correct this condition are applicable here, it being remembered that no food turns to milk, but that the milk supply is increased only when the general health of the mother is improved. As a rule, the diet should be the same as before pregnancy, except more nourishing if possible, for now provision must be made for two. Unless the milk is too abundant, saline aperients should never be given for constipation.

It is Nature's intention that a mother nurse her offspring, and she has placed few obstacles in the way of the successful performance of this duty; but there are some conditions that contra-indicate nursing. Minor ailments and acute illnesses do not necessarily forbid it. If there is much fever, however, the milk contains a high percentage of protein, and is apt to disagree, so it is a good plan to discontinue in these cases until the mother improves. A mother suffering with serious complications following labor, or nephritis, grave anemias or heart disease should not nurse her baby. A mother with tuberculosis should under no circumstances do so. Should pregnancy intervene, nursing should be discontinued. In my experience, menstruation seldom has an unfavorable effect on the milk.

Human breast milk is the only ideal food for the young infant, and before the physician advises weaning, he should satisfy himself and the mother absolutely that he has tried every way possible to produce a healthy milk supply and that the discontinuance of nursing is imperative. As we have already seen, there are many expedients dependent on the individual case, and not until all these have been exhausted, and mixed feeding attempted, should weaning be begun. Even if an examination indicates imperfect milk, or the stools show some green mucus and small curds, the breast feeding should not be interefered with if the young infant shows improvement.

Eighty-five per cent. of all babies who die before 2 years of age are bottle fed. When there is not enough breast milk or when it cannot be made to agree by treating the mother, the addition of artificial food is invaluable. In employing mixed feeding up to 6 months of age, not a single breast feeding should be omitted, but with each nursing, after the baby has drained one breast, he should be given the bottle and allowed to nurse a suitable milk mixture, until satisfied. The baby thus gets all the breast milk possible, and by mixing it with the artificial food, the latter is rendered more digestible. The breasts, too, are constantly stimulated. Even if there is very little milk, its addition to the diet of an infant suffering with dyspepsia is most valuable, for mother's milk contains a digestive ferment that no chemist has yet been able to discover.

The choice of these different supplementary foods is often a difficult and discouraging problem. Cow's milk is the preference, but when it fails, even after diluting, boiling or peptonizing, one should not give up until one is sure that no food will agree as long as the baby takes the breast. As a temporary expedient, I have had success with some of the proprietary foods, especially when the fat content in mother's milk was high. Casein should not be attempted with breast milk. Constipation in the nursling is better controlled by mixed feeding than by any other means. I often give a bottle of cow's milk with a high percentage of fat, or some laxative food, or frequently milk of magnesia in one artificial feeding daily. After seven months it is best to use mixed feeding in all cases, with the idea of gradually training the infant stomach for the new food that weaning time will add. A 3 p. m. bottle without the nursing should be given, and later an additional one at 10 a. m. Frequently at about 6 months, the mother's milk begins to grow less, and the fat percentage high, and the baby shows signs of fat indigestion. Under such a condition a bottle of milk containing a low fat mixture should be given. When from any cause the mother's health is impaired and the milk is consequently below the standard, the needs of the infant may be temporarily supplied by the addition of artificial foods, thus giving the mother time to recuperate.

All mothers dread weaning and the "second summer." Weaning is just as natural as the beginning of nursing. Nature has provided the infant with digestive ferments to care for the new food. The dreaded "second summer" with the parents should be the "dreaded parents," with the infants. The father says, "I do not think a little of this potato and gravy will hurt him." The next meal it is possibly apple sauce or a chicken bone or hot biscuit and butter. I have found in the weaning diet list: bananas, cocoanut macaroons, bologna sausage, cheese and canned salmon. It is this and not teething that makes the second summer dangerous. There may be a diarrhea during the teething period, and although it is often mechanical, because of the extra amount of saliva secreted by the newly developed secretory glands, it is a fact that unless the feeding is properly regulated, more serious trouble may result. One is often asked, "When shall I wean the baby?" No age limit can be set, for each infant is different. By 1 year a normal baby will wean himself, if gradually a bottle of milk mixture is substituted for breast feeding, and cereals, toast with butter, broth, beef juice and coddled egg are added, depending on the growth and development of the child. Should the weaning time fall during the summer months, however, it is best to continue the mixed feeding until cool weather. Many mothers nurse their babies too long, without the addition of other foods. At 9 months the average infant weighs about 17 or 18 pounds. Few mothers have milk that will furnish sufficient nourishment for a child of this size. In the majority of instances, where mothers attempt to nurse their babies after 7 months, to the exclusion of other foods, they do so at the risk of grave malnutrition or rickets.

The General Practitioner and Research.—The general practitioner must be recognized as an essential adjunct in research. To him especially we should look to find out the early stage of disease and its progress. Hitherto the lack of this assistance has been the cause of the tardy advance of medicine.—James Mackenzie, *British Med. Jour.*

QUININ SOLUTION FOR BLADDER IRRIGATION

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In the course of fifteen years' experimentation in the treatment of cystitis in women, solutions of a great number of substances have been tried in the hope of discovering the ideal one. All the various silver salts have been tested. Two varieties of silver salts which have been made in my laboratory have been given a trial. Various oily substances, and combinations of germicides with oil, have also been investigated.

The requisite of an irrigating solution in cystitis in women is that it should be non-irritating, easily obtained, antiseptic, stimulating and healing to the inflamed surfaces.

Of all the substances used, quinin bisulphate best fulfils these requirements. It is easily soluble in water, is comparatively non-irritating and is distinctly antiseptic, much more so than the various irrigating solutions now used. It has been employed by me in cystitis in women for eight years. I first drew attention[1] to its use in 1908.

Quinin bisulphate has a phenol (carbolic acid) coefficient of 0.5, or is one-half as germicidal as pure phenol, and will inhibit the growth of fresh typhoid culture in the strength of 1:30,000. It may be used in irrigating in a strength of 1:2,000 without noticeable irritation.

It should be remembered that the antiseptic or growth-inhibiting action of a substance differs from the germicidal or bacteria-killing properties. The phenol coefficient, or the germicidal strength in terms of phenol, is the measure of the germicidal qualities. The antiseptic or inhibiting power of a substance must be measured by a comparison with other substances. The method which I have used in comparing the inhibiting qualities of substances is to take a measured amount of standard broth culture, 9 c.c., add to it 1 c.c. of twenty-four hour broth culture of typhoid bacilli, and to this then is added a certain proportion of the antiseptic substance to bring it up to the required strength to be tested, as for example, 1:30,000 of quinin bisulphate, which will inhibit. In this way one substance may be tested against another.

Mercuric chlorid will inhibit twenty-four hour typhoid in the strength of 1:50,000.

The more elaborate salts of quinin do not offer any advantage over the simple and easily obtained bisulphate. Chinosol (oxychinolin sulphate) has a phenol coefficient of 0.3, and will inhibit typhoid in the strength of 1:40,000. Thus, quinin bisulphate is a better germicide than chinosol, and differs but slightly from it in antiseptic qualities.

According to my experiments, mercuric chlorid will inhibit bacterial growth in a strength of 1:50,000; chinosol in 1:40,000; quinin bisulphate in 1:30,000.

The quinin bisulphate solution is useful for bladder irrigation and cystoscopic examinations. It is particularly satisfying to have such a strongly antiseptic solution through which to catheterize the ureters and so avoid infection.

174 West Fifty-Eighth Street.

1. McDonald, Ellice: Med. Rec., New York, Feb. 22, 1908.

A CASE OF SPLENOMYELOGENOUS LEUKEMIA TREATED WITH BENZOL

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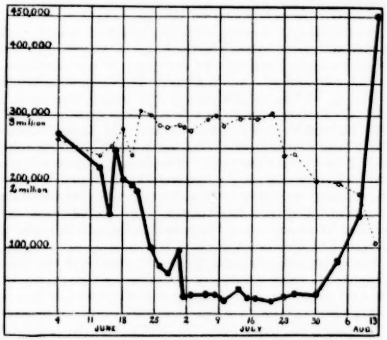
In view of the present interest in the benzol treatment of leukemia, the following clinical report may not come amiss, both because of the immediate benefit from the use of the drug and from the later acute recurrence in the course of the treatment.

History.—The patient, Mrs. M. B., a native of Rhode Island, was admitted to the Rhode Island Hospital, June 3, 1914, complaining of shortness of breath, general weakness and an abdominal tumor. Two years previously she had been under treatment in the same hospital for uterine hemorrhage, cough and general weakness. At this time she had a red cell-count of 3,712,000, a white cell-count of 120,000 and a hemoglobin of 29 per cent., with the characteristic blood-picture of splenomyelogenous leukemia. The spleen was then found enlarged to the umbilicus. After six weeks of Roentgen-ray treatment the red cell-count had become normal, though the white cell-count remained high, and the spleen had receded to the costal margin. The patient's family history was negative. She had suffered from the



Curves of blood-counts: solid line, white cell-count; broken line, red cell-count.

usual diseases of childhood, and her health had been poor for the last seventeen years. For six months before her admission she had coughed a great deal, though without hemoptysis, and had lost weight. She suffered constantly from gastric disturbance, together with pain in the precordial and left epigastric regions, and had been extremely dyspneic for two months before admission. For two years the patient had been annoyed by swelling of the legs whenever she was about, and for a year previous to her admission she had noticed a gradually increasing mass in the abdomen. Two years ago she had had severe uterine hemorrhage over a period of two months, and had been twice curetted. The onset of the present illness cannot be definitely dated, since it had been only an aggravation of the symptoms already present, with the addition of frequent nosebleeds and a profound nervous depression.

Physical Examination.—The patient is a poorly developed and greatly emaciated woman of 40, propped up in bed and extremely dyspneic. The expression is anxious and pained, and the general condition seems almost hopeless. The skin is sallow and pale, and the mucous membranes are anemic. The chest is poorly formed, with small expansion. Respiration is rapid and labored, and evidently painful. The percussion note is everywhere resonant; the breath sounds are vesicular, with numerous moist râles over the whole chest. The point of maximum cardiac impulse is in the fifth inter-

space 7 cm. to the left of the midsternal line. The left border of the heart is 9 cm. to the left, and the right border 4.5 cm. to the right of the midsternal line. There is a loud, blowing systolic murmur at the apex. The pulse is rapid, of low tension and markedly irregular. A firm mass, evidently the enlarged spleen, occupies the whole left side of the abdomen, coming to the right of the midline just above the umbilicus and extending into the pelvis. The hilic notch can be felt at the umbilicus. The splenic tumor is decidedly tender on palpation. Both legs are slightly edematous to the knee; the knee-kicks are normal. There is no general glandular enlargement.

The blood examination on the day after admission showed: Red blood cells 2,610,000 (corrected for the white count); white blood cells 270,000; hemoglobin 60 per cent.

Differential count—Wright's stain—250 cells:

	No.	Per Cent.
Polymorphonuclear neutrophils	55	22
Polymorphonuclear basophils	0	....
Polymorphonuclear eosinophils	3	1.2
Small mononuclears	3	1.2
Large mononuclears	1	0.4
Neutrophilic myelocytes	183	73.2
Basophilic myelocytes	2	0.8
Eosinophilic myelocytes	3	1.2

The predominating white cells were myelocytes, ranging in size from 3.5 to 16.8 microns, with clear rounded or indented nuclei, and a finely granular protoplasm. No nucleated reds were found on this first examination.

Treatment and Results.—The patient had nearly expired as a result of the journey to the hospital, and her grave condition made it impossible to move her to the Roentgen-ray room for treatment. As no portable Roentgen apparatus was available, it was decided to try the benzol treatment. As soon as her condition had been somewhat improved by digitalis and rest, the administration of benzol (benzene, C_6H_6) was begun, and at the same time Fowler's solution was given in the usual way. The benzol, mixed with equal parts of olive oil, was administered in 10-minim capsules after meals, and was well tolerated with only occasional complaint of slight heart-burn. The initial dose corresponded to 15 minims of the benzol daily, and this was later increased to 45 minims daily.

The accompanying curve shows the course of the red and white counts from the time of the patient's admission. Up to the time when the benzol was begun there had been a drop in the white cell-count, possibly because of the arsenic, which was started before the benzol. Shortly after the administration of the benzol was begun, there occurred the usual initial rise in the white cell-count; then following this came a rapid and steady reduction in the leukocytosis. Hand in hand with this reduction came a slight increase in the red cell-count, while the patient's general condition improved greatly. By the end of a month she was sitting up in a chair, no longer dyspneic, and was rapidly recovering her appetite. The spleen was entirely to the left of the midline, with its lower edge at the iliac crest, and had become hard and no longer painful on palpation.

The differential count, July 3, was as follows:

	No.	Per Cent.
Polymorphonuclear neutrophils	84	42
Polymorphonuclear basophils	0	....
Polymorphonuclear eosinophils	0	....
Small mononuclears	2	1
Large mononuclears	20	10
Myelocytes	60	30
Transitionals	25	12.5
Nucleated red cells	4	2
Normoblasts	3	1.5
Unclassified	2	1

It was noted that the nuclei of the myelocytes were becoming more and more granular, and that the distinction between myelocytes and transitionals was increasingly hard to draw. Myelocytes of the type found in the first smear, with clear nuclei, were no longer to be seen. A few polychromatophilic and stippled red cells were found in this preparation, perhaps indications of the toxic effect of the benzol or of the arsenic.

For three weeks this improvement continued, and the patient even asked to be moved into the ward. Then, July 24, her temperature abruptly rose, and on the 27th she complained of pain in the left side. An area of extreme tenderness was discovered on the enlarged spleen, probably corresponding to a fresh infarct. The red cell-count had already fallen a little, and the white cell-count had risen. From this time her failure was rapid. July 30 the red count had fallen to 2,000,000 and the benzol was discontinued. Recourse was had to the Roentgen ray, but the patient developed the signs of an acute leukemia, and within thirteen days of the withdrawal of the benzol died with a white count of 456,000.

I wish to acknowledge the kindness of Dr. Henry A. Cooke in permitting the publication of this case record.

CLOSURE OF PYLORUS. CASE REPORT WITH SUGGESTION AS TO TECHNIC

RICHARD A. BARR, M.D., NASHVILLE, TENN.

History.—Miss G., white, aged 28, was admitted Nov. 30, 1914.

Family history unimportant. Patient had typhoid fever seven and one-half years previous to admission. Nothing else of interest in previous personal history.

Patient had stomach trouble ever since the attack of typhoid fever. This began with sour stomach and gas formation. Later she began having colic. The pain was epigastric and usually came on about 4 p. m. She would have these attacks of pain every day for a few days or even a few weeks, and then she would have no more for a varying length of time. At the time of this report she had had no attack for eight months. She had until two weeks prior to admission a burning spot in her back at the angle of the right scapula. This had been present for two years, but disappeared at the time mentioned and a dull ache began in the same place with a tendency to radiate around her chest to the ninth or tenth costal cartilage. She had never vomited and had only had nausea two or three times in the seven years. No jaundice, no constipation. Her attacks were worse in winter. There were times when eating crackers relieved the pain, but no period during which pain always came with an empty stomach. Her mornings were always free of discomfort. There was no period when pain followed the taking of food.

Three years and again two years prior to admission she had an attack diagnosed as peritonitis, which began with epigastric pain, and each attack kept her in bed for some weeks.

Physical Examination.—Physical examination was almost negative, except that the patient was thin. She was not emaciated and her skin was clear.

Blood: Hemoglobin 85 per cent. W. B. C. 11,500. R. B. C. 4,960,000.

Urine normal.

Stomach contents after ordinary test meal showed reduced acidity, but free hydrochloric and free lactic acid.

Diagnosis.—Chronic calculous cholecystitis with probable ulcer of duodenum.

Operation.—Operation disclosed plainly marked chronic appendicitis, indurated ulcer duodenum and apparently normal gall-bladder.

Appendectomy and posterior no-loop gastrojejunostomy were done, and then the pylorus was occluded by a variation of the Biondi method.

The necessity of occluding the pylorus in parapyloric ulcers without stenosis is now well established and the difficulty of accomplishing this occlusion, except by division and closure of the two ends, is equally well known. Timidity often causes us to try some less difficult procedure in hope of securing a good result, but we should only be deterred from making a complete and permanent occlusion by the special features of the individual case. In this case I mobilized the pylorus by ligature and division of the omentum. While I was doing this I decided to try a little technical procedure that I have several times thought of as being applicable in these cases.

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I made a vertical incision through the peritoneal and muscular coats of the duodenum between the ulcer and the pyloric vein, so called. This wound I stripped back from the underlying mucous coat, and then dissected loose posteriorly the exposed cylinder of mucous membrane, which was easily cleared for about an inch. The mucous membrane was then doubly ligated near the center, with just space enough between the two ligatures to allow for cutting through with knife or scissors. The mucous membrane was divided between the ligatures and a purse-string of catgut run around the base of each stump in the angle where it joined the other coats of the intestine. This suture was placed rather in the muscular coat than in the mucous membrane itself. The stumps were then umbilicated and the purse-strings tightened and tied, just as is done in disposing of the stump of the appendix. The serous-muscular wound was closed with two rows of sutures, the peritoneal coat being turned in against the muscle of the posterior wall of the duodenum.

While handling the stumps one of the ligatures slipped off. The mucous membrane was seized with forceps and inverted without further effort at ligation. I am rather inclined to think that this would be the preferable routine method, except for possible hemorrhage from the cut edge of the mucous membrane, and this could certainly be controlled by proper care in placing the purse-string sutures.

I am sure that this idea is a good one and simplifies closure of the pylorus very considerably. It can be carried out without dividing the omentum, as there is no necessity for mobilizing the pylorus. It produces such a long gap, free of mucous membrane, that the continuity of the lumen of the bowel is not likely ever to be reestablished.

A longitudinal incision may be used in the serous-muscular coat instead of the vertical incision which I employed, and would have some advantages, but would cause more hemorrhage.

Ligation of the exposed cylinder of mucous membrane at both ends with removal of intervening section, followed by careful closure with inversion of the serous-muscular structures so as to obliterate the space left vacant, could be more easily done, and would probably be satisfactory though not so pleasing technically.

The patient made an uneventful recovery.

POISONING BY MERCURIC CHLORID PRESENTING UNUSUAL FEATURES

HORATIO C. WOOD, JR., M.D., PHILADELPHIA

The following case seems worthy of record because of the size of the dose of mercuric chlorid, the delay in onset of symptoms, and the prolonged suppression of urine.

J. M., aged 43, a man of splendid physique, walked into the accident ward of the Medico-Chirurgical Hospital and stated that he had taken mercuric chlorid tablets (presumably 7½ grains each) by mistake. According to his statement about an hour and a half previously he had taken five tablets but had felt no evil effects until an hour later, when he began to have some nausea and had vomited on his way to the hospital. He was at once given milk and eggs, the stomach washed out and apomorphin injected hypodermically. He was then put to bed, milk and eggs continued, and enteroclysis employed. As there did not appear to be any absorption of the water from the colon the enteroclysis was discontinued after a few hours and hypodermoclysis substituted. The treatment consisted in the administration of demulcents, 4 ounces of milk every two hours, 4 ounces of water by mouth every two hours, hypodermoclysis ranging from a pint to a quart in twenty-four hours, dry cupping over the loins, hot packs twice a day, and toward the end stimulants and anodynes as indicated.

On the second day the nausea and vomiting disappeared (I believe it was as much due to the apomorphin which had been given, as to the poison) and did not become manifest again until the seventh day. During these five days the patient made no complaint of pain and did not seem in any way to feel ill. The temperature ranged between 99 and 101 F. from his admission till the eighth day, when it dropped slightly below normal and from then ranged between 97 and 98 until death.

On the sixth day he complained of some pain in swallowing and his stomach rejected some of the water which he drank. On the seventh the pain in swallowing was more marked, the pharynx was found intensely congested and there were one or two small ulcers on the mucous membrane of the mouth. The ulcerations extended in breadth and depth, and on the tenth day a large part of the pharynx was necrotic. On the eleventh day some dulness, with bubbling râles, was noted at the base of the left chest. Despite stimulation the quantity of fluid in the lungs increased and he died of pulmonary edema on the twelfth day.

The most interesting feature in the case, aside from the slowness of the onset, was the almost complete suppression of urine for a period of about a week. The accompanying table shows the daily quantity of urine.

TABLE SHOWING DAILY QUANTITY OF URINE

Day	Quantity, Ounces	Specific Gravity	Amount of Albumin
1.....	1½	1.020	Large
2.....	⅛	?	Large
3.....	none		
4.....	none		Moderate
5.....	½	?	
6.....	⅝	1.012	Small
7.....	1	1.014	Small
8.....	4		
9.....	9	1.014	Small
10.....	11		
11.....	14	1.010	Trace

In a period of 120 hours, therefore, he had secreted less than 2 ounces of urine, despite the fact that he was drinking nearly 2 quarts of liquids and receiving daily nearly another quart hypodermically. There was, however, no evidence of any dropsical accumulation either in the extremities or chest. Some was lost through the bowels although the purging was by no means violent. From the sixth day, the quantity of urine increased daily—despite the fact that the amount of fluid ingested was less because of the difficulty in swallowing which developed about this time—until the day before his death, when he passed 16 ounces.

Holland (Peterson and Haines, Toxicology, 1914, ii, 391) says that after the swallowing of corrosive sublimate "The onset is never delayed half an hour," and I have been unable to find any case in the literature in which symptoms have not appeared promptly. Although we have no definite knowledge in this case of the exact time intervening between the taking of the poison and the onset of symptoms, there was no apparent reason to doubt the statement of the patient. The above quoted remark as to the onset of symptoms in mercuric chlorid poisoning is at least open to question.

It is of interest to note, also, the entire absence of any symptoms suggestive of uremia, either headache, high blood-pressure, urinous odor to the breath or disturbed intellection, despite the fact that the kidneys had practically entirely ceased functioning for nearly a week. Dobsenz (New York Med. Jour., July 26, 1913) reports a case of mercuric chlorid poisoning in which only 10 drops of urine were passed in five days, the patient eventually recovering.

Health and Safety in Metallurgical Plants.—In the metallurgy of iron and steel alone there are more than 150,000 men employed; 30,000 to 35,000 persons are injured and a considerable number are killed each year. In all the branches of the mining industry that are conducted above ground there are 1,300,000 employees, and not less than 100,000 are injured and a considerable number killed each year. In addition, the health conditions in many of the metallurgical plants are bad and the health of a larger number of persons is permanently impaired by the injurious conditions to which they are exposed.—Report of Director, Bureau of Mines, 1914.

REPORT OF A CASE OF DIABETES MELLITUS COMPLICATED BY OCCASIONAL PENTOSURIA AND LACTOSURIA *

JACOB ROSENBLOOM, M.D., PH.D., PITTSBURGH

A careful search of the literature fails to show that any case similar to the one to be described in this paper has ever been noted previously. The subject of this investigation was referred to me by Dr. J. Hartly Anderson on account of the presence of a reducing substance in the urine.

The patient is a strong adult male, with no symptoms of diabetes mellitus, and the only fact of importance obtained from the history and physical examination of the patient is that several years ago an intestinal anastomosis was done.

It may be noted by a study of Tables 1 and 2 that the patient is truly diabetic, with a tolerance of from 30 to 60 gm. of starch, and also that when given lactose, he excretes lactose in the urine. On one occasion pentose was also present in the urine, but as this was found only once, we must consider it an alimentary pentosuria.

This unusual excretion of lactose in the urine following the ingestion of milk requires explanation. Von Halaz[1] found a lactosuria after the administration of a moderate amount of milk in patients with a dilated stomach. Grosz[2] has found an excretion of lactose in the urine in cases with gastric diseases, mostly carcinoma with dilatation, when given 150 gm. of lactose in a fasting state. Mehu[3] found lactose in the urine of patients who have taken large quantities of milk over a considerable period of time.

Outside of the occurrence of lactose in the urine of pregnant women, the reports mentioned are all that I could find after a careful search of the literature, as regards the excretion of lactose in the male and in diabetes and other diseased conditions.

The only possibilities that I can offer as to the reason for the excretion of lactose in this individual are that perhaps owing to the lack of a lactose-splitting enzyme in the intestines (possibly due to the intestinal anastomosis), the lactose as such is not stored in the liver as glycogen and, circulating in the blood as lactose, is promptly eliminated; or, owing to some pathology of the stomach, the lactose is absorbed from this viscus before hydrolysis, and is then eliminated.

5737 Forbes Street.

TABLE 1.—EXAMINATION OF URINE

Date	Volume of Urine in 24 Hrs. C.c.	Fehling Test	Benedict Test	Nylander Test	Fermentation	Osazone*	Polariscope	Pentose Color Tests†	Amount of Reducing Substance in Grams: Filtration	Fermentation	Polariscope	Nitrogen Content of Urine, Gm.	Diet: Nitrogen, Gm.	Diet: Starch, Gm.	Remarks
10/25/13	1,345	Atypical	Atypical	—	0	Pentose and lactose	—	+	11.5	0	—	—	—	50	Urine collected in eight three-hour periods.‖
11/ 6/13	1,140	+	+	+	+	Glucose	3 ° dextro	0	9.3	9.2	9.0	14.1	16	120	No milk in diet.
11/ 7/13	1,030	Atypical	Atypical	+	0	Lactose‡	1.9 ° dextro	0	4.9	0	4.7	14.5	18	80	Milk in diet.
11/ 8/13	1,320	Atypical	Atypical	+	0	Lactose‡	3 ° dextro	0	9.4	0	9.1	15.7	18	80	No milk in diet.
11/ 9/13	1,580	0	0	0	0	0	0.50° dextro	0	—	—	—	13.8	18	45	No milk in diet.
11/10/13§	1,500	Atypical	Very faint	0	+	Glucose	0.8 ° dextro	0	1.88	1.9	1.7	18.7	18	60	No milk in diet.
11/11/13§	1,760	Atypical	Very faint	0	0	0	0	0	—	—	—	18.0	18	0	No milk in diet.
1/26/14	1,320	—0	0	0	0	0	—	0	—	—	—	17.6	18	30	No milk in diet.

* Osazones were identified by the microscopic character of the crystals, their solubility in various reagents, and their melting point.

‡ Lactose was also identified by Rubner's, the Wöhlk-Maratti, and the mucic acid tests. Lactose crystals were also isolated from the urine by Hofmeister's method.

† The following tests were used: Salkowski's, Bial's, Jolles' and Neumann's, and by production of furfurol from the isolated osazone.

§ Nitrogen content of stool for these two days was 6.7 per cent. of the nitrogen intake. The percentage of neutral fat in the stool fat was 21.1.

‖ All contained a reducing non-fermentable substance. Diet contained milk.

TABLE 2.—GLUCOSE TOLERANCE TEST ONE HOUR AFTER BREAKFAST (95 GM. OF GLUCOSE GIVEN)

Hours After Giving Glucose	Volume of Urine, C.c.	Glucose, Gm.	Sugar Content of Blood, Per Cent.
First 3	385	6.9	0.37
Second 3	270	2.0	....
Third 3	190	0.7	....
Following 10	550	Trace	....
Totals	1,395	9.6	....

* From the Biochemical Laboratory of the Western Pennsylvania Hospital.

1. Von Halaz: Alimentare Laktosuria bei Krankheiten des Magens, Deutsch. med. Wchnschr., 1908, xxxiv, 818.

2. Grosz: Beobachtungen über Glykosurie im Säuglingsalter, nebst Versuchen über alimentare Glykosurie, Jahrb. f. Kinderh., 1892, xxxi, 83.

3. Mehu: Ueber die Anwesenheit von Zucker im Harn von Menschen welche mit Milch ernährt werden, Jour. Pharm. Chim., 1887, xvi, 151, x, 145; Chem. Zentralbl., 1887, xviii, 1300.

CONGENITAL ABSENCE OF RIGHT PECTORALIS MAJOR AND MINOR MUSCLES

JOHN GARDINER, M.D., TOLEDO, OHIO

B. B., aged 30, with negative previous history, has always been robust, and his health always good. He states that the absence of the muscles was not noticed until he himself discovered that his chest was not the same as other boys'.

An examination reveals that there is an entire absence of the right pectoralis major and minor muscles, which he has always taken to be a "cave-in" of the ribs. There is no deformity of the ribs, and on the right side they are covered only by skin, where normally would be the muscles. When the right arm is elevated, a fibrous cord about one-eighth inch in diameter is the only vestige of the muscle which indicates the direction which the fibers of the pectoralis major would take. It has its origin over the costochondral junction of the third rib, and is lost under the anterior fold of the deltoid. There is no limit to the motion of the shoulder or arm. The movements are identical with those of the normal left upper extremity. On the right side the clavicular portion of the deltoid and subclavius have hypertrophied to carry on the function of the absent pectoralis major and minor muscles to the extent that, as the patient states, his right arm and shoulder are stronger than his left.

The absence of the muscles is taken to be due to a disturbance of the anlagen because of the negative history, the lack of other signs of atrophy of muscles supplied by the brachial plexus, and the complete absence of muscular tissue.

The interesting feature of this case is that it reveals what may be done by a patient whose pectoral muscles have been removed for malignancy.

Colton Building.

Pessimism.—Since things spontaneously change for the worse, if they be not by design changed for the better, evils must accumulate without end.—*Lord Bacon.*

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REPORT OF A CASE OF ACUTE POLIOMYELITIS

LEWIS F. FRISSELL, M.D., NEW YORK

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The following case is reported because of its being readily mistaken for an ordinary febrile affection. Its probable nature was determined only by the development of a bladder paralysis and the results of lumbar puncture.

On October 4, a Harvard student consulted me for an ordinary upper respiratory inflammation; rhinitis and pharyngitis were moderately severe, but without febrile disturbance. Owing to his susceptibility to colds, as a matter of prudence he was kept in bed until October 7; on that day he was allowed to get up, and returned to Cambridge the evening of the ninth. With the exception of one trip to Brockton, he had been in Cambridge since the first of October, and two days previous to my seeing him, had been to Piping Rock, L. I. On the tenth, he felt badly, and still worse on the eleventh, when he returned to New York and was seen by me, with a temperature of 102 F., the signs of a moderate bronchitis, and a barely palpable spleen. There was no cerebral irritation, headache, or disturbance of the normal reflexes, and the patient had no stiff neck, Kernig, or other characteristic symptoms of poliomyelitis. His temperature for forty-eight hours ranged from 100 to 103.6 F. On the fourteenth he was unable to pass urine. On catheterization it was noticed that the bladder had lost its power, was flaccid, and contained 24 ounces with comparatively little discomfort. On the introduction of the catheter, the urine barely flowed, and it required firm pressure on the abdomen to empty it. There was no other loss of muscular power. Knee jerks, Achilles tendon, cremasteric, abdominal and triceps reflexes were present. No muscle groups apart from the bladder were involved. This symptom made one suspicious of poliomyelitis. Dr. Draper was called in consultation and concurred in the probable diagnosis. Lumbar puncture was advised, which was performed on the sixteenth. A clear fluid was obtained with a drop flow, which showed a cell count of 95, a negative butyric acid reaction and negative Wassermann. The temperature remained normal, no other paralyses developed, and the bladder cleared up on the twenty-sixth.

The blood count showed no change. On the twelfth the white blood cells were 6,800, with a polymorphonuclear count of 72; on the fifteenth the polymorphonuclear count had fallen to 54, and on the seventeenth to 44, with an increased lymphocyte count and eosinophils varying from 2 to 5 per cent. Clinical tests were otherwise negative, except for a suspicious Widal reaction due to protective inoculation in June, 1914.

The diagnosis is made by exclusion. The flaccid paralysis of the bladder could scarcely be due to other than a central lesion. In the absence of arteriosclerotic change, or other reason for hemorrhage of the cord, this which is the likeliest diagnosis, apart from the infectious diseases, could be ruled out.

The cell count of the spinal fluid is one common to syphilitic tuberculosis and poliomyelitis at the time of onset of paralytic symptoms. The first of these could be excluded by a negative Wassermann, the second by the course of the disease, leaving us as the probable diagnosis, a poliomyelitis.

The case is reported because, in the absence of an epidemic, the diagnosis would unquestionably have been overlooked had it not been for the paralysis of the bladder, of which as the sole paralytic symptom I can find no record in literature. The disease had none of the earmarks of poliomyelitis, such as headache, rigidity, Kernig, or nervous irritability. It also has some bearing on the probable existence of abortive cases without paralytic symptoms.

Preventogram.—A stomach that makes its presence known is a poor stomach—but many only begin to know what they have lost when they become aware that they have it!—*Buffalo Sanitary Bull.*

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 434)

V

B. DEPRESSANTS: 4. OF THE CENTRAL NERVOUS SYSTEM — MORPHIN GROUP

MORPHIN

Morphin is much the most important member of the group, but others have special fields of usefulness. Opium depends for its therapeutic value almost exclusively on the morphin which it contains, but the action of morphin in opium is modified to a certain extent by other constituents present, this probably being an advantage in some conditions and a disadvantage in others. Not enough is known about the actions of narcotin to enable us to state definitely how it modifies the actions of the morphin in opium, but it is probably of no importance in most cases when opium is used therapeutically, though its action may assume some significance when toxic doses of opium are taken.

Thebain has an action closely resembling that of strychnin, but it and codein are present in opium in amounts too small to influence the action of the morphin appreciably.

Opium contains a caoutchouc-like substance and other colloidal matter which interfere with the absorption of the alkaloids, and thus prolong the local action on the intestine after the oral administration of opium. With this exception we may consider the actions of opium and morphin together, remembering, however, that with massive doses of opium the convulsant action of the other alkaloids is probably concerned.

The discovery of morphin by Sertürner of Hanover in 1805 has been characterized as the greatest discovery in the field of materia medica and toxicology of all times, and Kobert has called attention to the fact that all subsequent discoveries of alkaloids, or plant bases, since then have resulted from modified repetitions of the work of that apothecary. Until then it had not been supposed that plants might yield principles capable of combining with acids to form salts. To-day, however, the alkaloids constitute the most important group of plant principles in the materia medica, one reason being that many of them can be prepared in high degree of purity.

About 1850, Pravaz, a French soldier and surgeon, invented the syringe which is still known by his name and which he used for injecting ferric chlorid into aneurysms; a little later Alexander Wood utilized the syringe for the subcutaneous injection of morphin.

Morphin is known to contain two hydroxyl groups, one being phenolic, or united to a benzene ring, and the other alcoholic, or united to a group such as occurs in alcohols. The replacing of one or both of these hydroxyl groups serves to modify the actions of morphin in various ways. Codein, or methyl morphin, differs chemically from morphin only by having a methyl group replacing one of the hydroxyls; ethyl morphin hydrochlorid (dionin) has an ethyl group in place of one of the hydroxyls of morphin; and

* This is the fifth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

diacetyl morphin (heroin) differs from morphin by having two acetyl groups replacing two hydroxyls.

The number of substances which may be formed in this way is very large, but none of the others has attained any considerable degree of importance in therapeutics.

Apomorphin is also derived from morphin, and while it retains the narcotic action to some extent, the specific emetic action which it acquires places it in the group of emetics.

Morphin has a variety of actions which are severally of therapeutic or toxicologic importance, and since these different actions cannot be seen to advantage in a single species of animal the effects are necessarily studied on different species. For example, morphin exerts a strychnin-like action on the spinal cord, which can be observed very conveniently in the frog, but this action is masked in the higher mammals as a rule by the more pronounced actions on the cerebrum and respiratory center.

Witkowski observed that the depressant effects of large doses of morphin on the central nervous system of the frog were comparable to those resulting after the removal of successive portions of the brain beginning above and proceeding downward. These several effects of morphin are not separated sharply, but with appropriate doses they can be made out with some degree of clearness.

Following these actions on the higher parts of the central nervous system, the spinal cord is first depressed, and then rendered hyperexcitable so that the condition is scarcely distinguishable from that induced by strychnin.

It is often said that man reacts specifically to morphin, but the character of the action is modified materially with the age and sex of the patient and with the size of the dose; thus van Swieten observed that different amounts of the same preparation exerted varying types of action, and he obtained stimulation with small doses, and depression with large. Children occasionally show tetanic convulsions after opium.

Binz gives the following graphic description of the action of moderate amounts of morphin on the higher centers in normal man:

> After some minutes pleasant sensations are usually experienced; the brain seems to be relieved from the confines of the skull; glittering fantastic visions appear; one is indisposed to move; questions are answered with stammering; beautiful visions appear, but the beauty is short-lived, the eyelids grow heavy, the limbs lie motionless; every impulse sent out to them from the brain dies away; the whole body feels heavy as lead, and soon one sinks into deep sleep which is indistinguishable from the normal, if the dose is not too large. The respiration and heart-beat are slowed, one lies asleep but he can be aroused by a loud noise to a confused condition, but only by stronger stimuli can one be aroused completely.

This description applies to normal man; hence it does not include the most pronounced action which follows the therapeutic use of small or moderate doses of morphin which lessen or abolish the perception of pain.

This analgesic action is exerted on the centers concerned with the perception of pain, not in the peripheral mechanism, for the effect is no greater in the immediate region of a subcutaneous injection than it is elsewhere. The belief that morphin has a local analgesic action has resulted in a number of irrational methods of application, for example, urethral injections and other local applications.

Lead and opium wash forms a poultice-like mass which retains the heat of the body while macerating the tissue, and the lead is astringent. Little or none of the morphin in the opium can be absorbed into the skin in such a case, and it is probable that mucilage of acacia could be substituted for the tincture of opium with advantage.

A comparison of the analgesic value of morphin and of hydrated chloral is afforded by observing their effects on rabbits. If one animal receives a hypnotic dose of hydrated chloral, and another an analgesic dose of morphin, it may be observed that the first reacts to painful stimuli, but the second remains awake or can be aroused easily. Of course, a massive dose of hydrated chloral will prevent any perception of pain.

A further advantage which morphin has over hydrated chloral is that it does not depress the heart and vasomotor centers. It must be remembered, when one speaks of the central actions of morphin and the absence of peripheral effects, that the actions on the gastro-intestinal tract constitute an exception.

Morphin is not actively hypnotic in doses which leave the respiratory center unaffected, the action on that center occurring with doses just larger than the minimal analgetic, but sleep often follows the use of a small dose of morphin when wakefulness is due to pain, which the morphin relieves.

The effects of morphin on the medullary centers stand next in importance to those exerted on the cerebrum, the respiratory center being depressed with smaller doses than are required to affect the other centers. On these two actions, the analgesic in the brain, and the respiratory in the medulla, depend the greatest therapeutic uses of morphin, for the relief of pain and for the control of cough.

Morphin depresses the respiratory center in such a way that carbon dioxid in the blood no longer increases the rate of respiration, but it does increase the depth of the individual respirations as much as it does in the normal animal. This depression results in lessening the cough reflex. It may be well to remember that while morphin lessens or prevents cough, it does not cure the condition of which the cough is a symptom and in some cases a necessary result, since it may be necessary to remove the exudate in the air passages.

The respiratory center shows a peculiar susceptibility to chloroform after morphin has depressed it, and when morphin is used before general anesthesia ether is to be preferred.

Small doses of morphin have little influence on the vagus center in man, but somewhat larger doses stimulate it, and with toxic doses it and all the higher centers are depressed.

Patients who suffer from cardiac lesions may show a greater response to vagus stimulation than normal man, and as little as 10 mg. (⅙ grain) of morphin has been followed by Cheyne-Stokes respiration in a man suffering with aortic insufficiency. We have here a chain of effects for which Cushny offers this explanation: The respiratory disturbances due to the morphin cause vagus stimulation with decreased heart-rate and disturbed circulation, which in turn causes Cheyne-Stokes respiration. Atropin abolishes the slowing of the heart-rate by paralyzing the vagus end-

ings, and the Cheyne-Stokes respiration disappears with the improvement in the circulation.

Small doses of morphin cause dilatation of the cutaneous vessels through the action on the vasomotor centers, increasing the actions of diaphoretic drugs which may be administered with it. Dilatation of the cutaneous vessels from any cause may cause erythema, and this sometimes follows the use of morphin or opium. While small doses cause this cutaneous dilatation, large doses have the opposite effect, the skin appearing pale because of the constriction of the peripheral vessels and dilatation of the splanchnic, due to vasomotor depression.

Morphin stimulates the centers in the medulla which are concerned with vomiting with varying degrees of intensity. Emesis may result even with moderate doses, or where the narcotic action is delayed after large doses in man. Vomiting cannot be induced during deep narcosis; hence this symptom is commonly absent in the late stages of morphin poisoning, while nausea, at least, is a more common symptom with moderate amounts. This emetic action of morphin is of some importance in connection with its use in strychnin poisoning, in which morphin is sometimes recommended.

The convulsant action of morphin is not usually seen in man because he succumbs to the narcotic action before the effect on the cord can be developed, but children occasionally show hyperexcitability, or even convulsions, after poisonous doses of opium. The convulsant action of codein is more pronounced than is that of morphin relatively to the narcotic effect. Toxic doses of opium probably contain enough narcotin to add materially to the convulsant action of the morphin present.

Therapeutic doses of morphin have little direct action on the heart except that they may depress the accelerator mechanism, permitting the vagus to exercise increased control over the heart-rate; the action is commonly utilized in therapeutics. The slowing which follows morphin is not always necessarily attributable to this direct action, for it may follow the relief of pain and anxiety, and the resulting rest and sleep.

The nauseant action of morphin is accompanied by some increase in the secretion of the bronchial glands, which is probably due in part to the excretion of the drug by them.

The pupils are not acted on by morphin directly, the miosis which is seen in morphin poisoning being due to the central action; it appears to be analogous to the miosis which occurs during sleep. This is worthy of attention because it is sometimes stated that the degree of antagonism between morphin and scopolamin can be estimated by changes in the size of the pupil. The actions are so different that little importance should be attached to the state of the pupils when morphin and scopolamin are used together.

It is very well known that morphin and opium lessen or abolish peristalsis and relieve pain in the gastro-intestinal tract. In this we have an example of the local analgesic action of morphin, but this is an exception to the rule and it is not seen elsewhere. Even here morphin does not relieve all pain by its local action. It abolishes sensory impulses from the mucous surface of the stomach, but not from the serous.

The behavior of the movements of the stomach after morphin depends on the dose and mode of administration, the gastric movements being increased by small doses, and the pylorus caused to contract firmly by somewhat larger ones, administered in such a way that they enter the circulation with a minimum of local action, as with subcutaneous injection, the effect being due to vagus stimulation.

Many investigators have endeavored to explain the direct and indirect influence of morphin on the gastro-intestinal tract, but there is still much to be learned on the subject.

Morphin does not interfere directly with the secretion of urine, but in larger doses it causes the sphincter of the bladder to contract, preventing urination; hence it is often necessary to empty the bladder by means of a catheter during morphin poisoning.

Morphin is absorbed readily from the gastro-intestinal tract, and more rapidly after subcutaneous injection. Opium is used in the form of a pill when it is desired to retard absorption in order that the local action in the stomach and intestine may be prolonged, the colloidal matter delaying the absorption of the alkaloid.

Various explanations have been offered for the alleged greater action of opium than of an amount of morphin equal to that which it contains, but there is no satisfactory evidence that opium has any advantages over morphin except those just mentioned, which insure its increased local action.

Morphin is fixed in the liver of some animals in considerable amounts, and a small proportion may pass into the urine, though testimony on this subject is conflicting; the kidneys are probably negligible as excretory organs when one is seeking to hasten elimination during morphin poisoning.

It is of the first importance that morphin is excreted into the stomach after it has entered the circulation, but it is probable that this excretion is not very active after the first hour following the absorption of the drug into the circulation. It is sometimes stated that the excretion into this organ goes on for many hours, but it is probable that in such cases absorption has been prolonged.

It is surprising that we know so little about the rate of elimination of morphin by previously healthy man in view of its obvious importance in medicolegal cases. Since cumulation does not occur when morphin is taken several times daily by habitués, we must suppose that they, at least, are capable of destroying or excreting the drug fairly rapidly.

Morphin is not dangerous to the infant in the uterus, since it does not breathe through its lungs, but it is dangerous to administer it to the mother at such a time that it will be in the fetal circulation at the time of birth, as it depresses the respiratory center and may cause death. It is excreted in the milk of the nursing mother, and may give rise to poisoning of the infant in that way.

The odoriferous principle of opium is excreted in the urine and may afford a clue in cases of suspected poisoning.

TOXICOLOGY

Few drugs have assumed greater toxicologic importance than opium and morphin, as the various tables of death by poisoning attest.

Habitués become careless and in many instances have taken overdoses with fatal effect. Morphin has been dispensed by error for quinin in many instances.

The administration of soothing-sirups to infants has been a prolific source of fatal poisoning. Morphin is a favorite method of suicide because of the painless death which it causes, but it is not so frequently used for the murder of adults as some of the more rapidly acting poisons, because the symptoms are apt to attract attention and treatment is so commonly successful. It is more commonly used for the murder of infants, however, and unfortunately, statistics on this score are probably of little value.

The importance of determining from what part of the cadaver any morphin was recovered may be illustrated by the following: A woman was found dead in a bath-tub of water. The person accused of her murder maintained that the dead woman had taken morphin as a preliminary to self-destruction by drowning. Morphin was found in the gastro-intestinal tract, but the chemist had not examined the duodenum and the ileum separately, and could give no information as to the source of that part of the recovered morphin. Fortunately, he recovered a notable amount from the gall-bladder, showing conclusively that it had been absorbed; it seemed so improbable that the woman could have carried out the purpose of drowning herself after the morphin she had taken had been absorbed into the circulation, that the accused was led to confess.

The fatal dose of morphin varies so widely with the circumstances attending its administration that it is impossible to convey an accurate idea of the fatal dose in a single sentence.

It is often stated that infants are extraordinarily susceptible to all opiates, but several pediatrists have recently stated that very small children frequently take opium and morphin very well. It is not advisable for the general practitioner to disregard the almost universal testimony on this subject until we know more about the conditions under which opium and morphin may be given to infants with safety.

Reference to the pages of THE JOURNAL during the past few years will disclose the fact that many deaths have followed the administration of soothing-sirups to infants.

Morphin is oxidized readily into the harmless oxydimorphin. This change may even take place in old pills of morphin which contain acacia as an excipient; it may occur in solutions which are kept for some time; and it is induced almost instantly by potassium permanganate, which is therefore of great value in destroying any morphin with which it may be brought into contact in the stomach. This change also probably takes place slowly in the body when morphin has been taken.

The treatment of morphin poisoning demands the washing of the stomach at frequent intervals as long as the washings give any evidence of containing morphin; the bowels should be emptied by vigorous means in order to remove any of the poison that may have been excreted into the intestine or which reaches it from the stomach. The patient should be kept awake if this is possible without resorting to violent means.

Efforts should be directed toward sustaining the respiratory center; this may be so depressed that the respiration is insufficient long before death, and one should not wait for actual paralysis before beginning artificial respiration. Caffein is a valuable stimulant both for the respiratory centers and for the cerebrum. The free use of atropin is sometimes advised, but this is evidently a source of danger. It would be better not to use more than one, or possibly two, therapeutic doses of atropin, and if stimulation still be needed resort should be had to caffein. Since the tonic contraction of the pylorus may prevent the passage of fluid into the intestine, antidotal drugs should not be administered by mouth, except such as are added to the water for washing the stomach.

The treatment of chronic morphinism cannot be detailed here, but it may be stated that other narcotics, such as belladonna, are usually substituted for the morphin until the painful stage of withdrawal has been passed. Relapses are common, but the treatment can be taken repeatedly, and an ultimate complete cure may be effected.

Morphin is decomposed at a temperature slightly above that at which it distils, and this is very near the temperature which obtains in the opium pipe. Hence the question has arisen whether the opium-smoker actually absorbs morphin or not; it seems probable that some morphin passes over with the smoke and, being inhaled, is absorbed.

(*To be continued*)

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 437*)

XVIII

MUMPS

This is a highly infectious disease, with a long period of incubation, from two to three weeks. There is more or less of it always present in most cities, and there are likely to be epidemics of it in certain seasons of the year, more particularly, perhaps, in the spring and fall. Children and youth, especially boys and young men, are the most susceptible to it. Infants and adults are not so likely to have it. Possibly adults are less likely to have it because they have been rendered immune by unrecognized mild attacks in childhood.

While the typical localization of this infection is in one or both parotid glands, the submaxillary glands may be coincidently involved, or may be the only glands involved. As simple and harmless as this disease generally is, it may cause very high temperature, sudden cardiac failure, and frequently in young boys and male adults a complication, or metastasis, of orchitis, which is always serious. In girls the mammary glands or the ovaries may show metastatic inflammation.

The complication of inflammation of the sexual glands is frequently attributed to the patient's taking cold. While chilling may be a factor in causing such complications, young men especially who remain in the house or even in bed may develop this complication of orchitis, and the danger of such a complication is greater after puberty than before. The peculiar interrelation of the parotid gland and the testicles or ovaries is biologically interesting, but has not been explained. Other complications are diarrheal attacks with bowel cramps, and in rare instances serious meningitis occurs. It is rare that more than one testicle is affected. This is exceedingly fortunate, as this testicle may be long hypertrophied and later atrophy

and become permanently sexually insufficient. It is probable that the same history is true of an ovarian complication, and may be an undiagnosed cause of some forms of ovarian pain and dysmenorrhea.

The parotid glands in this affection seem to show no tendency to suppurate, but parotitis, whether the epidemic form or a complication of some other disease, may cause serious cardiac depression. Even with high temperature in epidemic parotitis the pulse will often be found abnormally slow, at least for the height of the temperature.

Any great amount of manipulation of the inflamed parotid gland in mumps should be condemned as tending to cause absorption into the circulation of depressant toxins or secretions. This caution is not unique, but is parallel with the danger from too much manipulation of a hypersecreting thyroid gland, causing absorption into the blood of cardiac depressants.

The prognosis when meningitis is present is serious. Deafness has been caused, and even an optic neuritis has been stated to occur. Sudden death occasionally occurs without any assignable cause, except a sudden upright position after a patient has been in bed. Albuminuria may be present with high temperature, and acute nephritis has occurred. Endocarditis is another rare complication.

The white blood count in this disease os more or less characteristic, there being a lymphocytosis, although the whole number of leukocytes may vary, early in the disease being below normal. Barach[1] states that there is a leukopenia due to a decrease in the polynuclear cells, both relatively and absolutely, all through the disease. On the other hand, Feiling[2] states that there is always a slight increase in the total number of leukocytes. Barach also states that the mononuclear cells are relatively and absolutely increased. As the blood returns to normal the eosinophils, which have been almost absent, return in their usual numbers. This blood count is very distinct from the leukocytosis that is apt to be present if the gland is infected secondarily and an abscess is liable to form, in which case there would be a polymorphleukocytosis.

Contagium from this disease is probably pretty direct, that is, by close contact; but the contagium may be transmitted from the very early stages of the disease to perhaps some time after the disease is in abeyance. It has not been shown that animals are affected by the disease.

A patient with the disease should generally be isolated, and the attack will often be milder if the patient remains in bed. Although the disease can be serious, it is generally so mild in children that it is sometimes a question whether other children of the same family should not be allowed to contract it, for the reason that one attack generally confers immunity for all time, and the disease is much more serious in adults, especially in young men, than in children. Of course, an infected child, even though very mildly sick, is immediately sent home from school. On the other hand, doubtless not a few children with very mild cases are unwittingly allowed to remain at school.

The disease generally begins in one parotid gland and quickly goes to the other, although not infrequently only one gland is affected. Occasionally the submaxillary or sublingual glands are the only ones attacked, and these cases may spread the mumps before the diagnosis is made. The inflammation in the first gland affected generally reaches its height in about four days, and the gland generally has returned to its normal size in from six to eight days. If the other gland is not quickly inflamed, but becomes inflamed later, the duration of the disease will be prolonged. The fever is generally mild, but it may be very high, and in such instances there is always likely to be more or less cardiac depression.

The same care of the child's surroundings in school should be given as in other contagious diseases to prevent the infection of others. The nurse or the mother should understand that infection is doubtless contained in the mucus and secretions of the mouth and throat; consequently infection will be given by close contact, as by kissing, by handkerchiefs, eating utensils, pencils, bedclothing, etc.

TREATMENT

The disease is so mild that it may not require any special treatment. Pain in the infected glands is rarely severe, and is modified by dry warmth or simple absorbent-cotton applications, and by any oily application, the latter to relax the tension of the skin over the swollen gland. For this purpose olive oil may be used, or petrolatum, or an ointment may be made with 10 per cent. methyl salicylate in petrolatum. It is inadvisable to use ice or cold applications to the parotid glands in mumps.

The diet should be mild, the bowels kept free, and in simple cases medicinal treatment is not needed. If the fever is very high, one or two doses of antipyrin or acetanilid may be given, with the knowledge that cardiac depression readily occurs in this disease. Hot drinks, as hot lemonade or hot tea, with a little alcohol in some form for its physiologic action in dilating the peripheral blood-vessels and promoting perspiration, is a satisfactory method of reducing the temperature. Tepid sponging may be of benefit, and hot sponging should be given the patient daily if he is too ill for a hot bath.

If a testicle is affected, the lesion is generally an orchitis, or it may be an epididymitis. Ice and cold applications are inadvisable in this metastasis from mumps. Warm, moist applications often relieve pain; but if the testicles are kept elevated and surrounded by absorbent cotton, and if perhaps some oil or fat, such as petrolatum, is applied, the inflammation will probably go away as rapidly as by any other treatment. Strapping is inadvisable in this complication. Any massage, or the rubbing in of any ointment or other preparation in this kind of orchitis, or to the parotid glands, is inadvisable in mumps. Ichthyol applications in from 10 to 20 per cent. strength, either in petrolatum or in olive oil, or glycerin and water, have been largely used locally in this inflammation. Lead and opium wash has been frequently used; but the less this inflamed gland is manipulated, the better.

If the mammary gland becomes metastatically inflamed, the treatment is about the same as that for the parotid. If it is decided that the ovary is inflamed, but little can be done, except absolute rest and the administration of a sedative if there is pain. If there is much pain from any of these inflamed glands, morphin or codein may be advisable if it seems unwise to give a coal-tar analgesic.

(*To be continued*)

1. Barach, J. H.: Morphology of the Blood in Epidemic Parotitis, Arch. Int. Med., December, 1913, p. 751.
2. Feiling, A.: Lancet, London, July 12, 1913.

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SATURDAY, FEBRUARY 6, 1915

PLASMA REMOVAL—PLASMAPHAERESIS

Reference to text-books will make evident that venesection is by no means an entirely discarded practice. Bloodletting as a professional procedure is known to have been carried out long prior to the era of Hippocrates, who speaks of it as having been frequently performed. Hippocrates and Galen had advised copious bleeding largely from the arm on the affected side in pleurisy and pneumonia. That practice was gradually abandoned as Greek traditions were lost sight of, and finally the Arabs substituted something entirely different, the pricking of a vein in the foot in order to let blood flow drop by drop. The ancient Greek practice was later revived by a Parisian physician named Brissot; but it was "the modern Galen," Jean Fernel, who was especially responsible for the revival of bleeding during the first half of the sixteenth century. Something of the subsequent history of the time-honored but often debatable venesection of later medical practice is known to most physicians. The admitted harmful consequences of a serious procedure of this sort finally led to its almost universal abandonment a generation or two ago. There are now signs of a revival of interest in the discreet use of bloodletting.

To remove more than one-third of the circulating blood is always fraught with danger. Even this quantity cannot be withdrawn with safety under various conditions. The drawbacks of venesection are dependent on both the immediate and the subsequent effects of the anemia which it produces. The danger of seriously reducing the oxygen-carrying capacity of the blood by the removal of a large number of erythrocytes in the blood withdrawn is admittedly a serious one, particularly in certain cases such as aneurysm, cardiac decompensation with low blood-count, and in various toxemias in which a venesection might be indicated. The loss of great numbers of blood-cells entails a prolonged effort on the part of the hemopoietic organs for regeneration.

The restoration of the liquid medium of the blood either from stores of reserve materials or by synthesis from the nutrient products absorbed from the alimentary tract seems to be a far easier physiologic performance than the regeneration of the cells of the blood. If, therefore, the withdrawal of fluid from the circulation could be carried out without the loss of these corpuscular elements of the blood, a decided advantage might be gained. At the Johns Hopkins Medical School, Abel, Rowntree and Turner[1] have attempted to devise a process by which this end may be attained. The underlying idea has been to undertake repeated removal of considerable quantities of blood, separating the corpuscles by vigorous centrifugalization, replacing the plasma by Locke's fluid, and reinjecting this together with the sedimented blood-cells.

The preliminary experiments on animals have shown that it is possible to withdraw without apparent injury quantities of blood-plasma that exceed several times the maximum amount of blood that can be safely drawn by the usual method of venesection, provided the corpuscular elements of the blood, suspended in a suitable medium, be returned to the vascular system after each bleeding. The procedure has been termed plasmaphaeresis (from ἀφαίρεσις, a withdrawal).

It cannot be emphasized too strongly that this interesting work is as yet entirely in an experimental stage. Whether or not it shall become applicable to human conditions remains to be learned. Meanwhile it may not be vain to speculate on the prospects involved. The possibility of increasing or decreasing (if only temporarily) the volume of fluid in the vascular apparatus, or of removing an excess of deleterious substances with the plasma, suggests a way for the use of a method of this kind in cases in which bleeding has hitherto been contra-indicated because of the attendant anemia; it would appear doubly advantageous for the patient in most of those instances in which venesection is now being done with good result. What has actually been accomplished in the preliminary trials on dogs shows that it is quite possible to withdraw by repeated bleedings, in a single day, a volume of blood more than twice that ordinarily contained in the body with no apparent injury to the subject if only the corpuscles are returned after each bleeding.

To put the method to a severe test, plasmaphaeresis was carried out on nephrectomized animals. Obviously, the removal of both kidneys, with the consequent suppression of renal excretory function, is a severe test for a therapeutic procedure. Nevertheless there was evidence of a relief of the symptoms consequent on bilateral nephrectomy by the withdrawal of plasma with its content of accumulated waste products. The improvement in the clinical condition of the animals thus treated was marked, and they lived longer than the untreated control subjects.

1. Abel, J. J.; Rowntree, L. G., and Turner, B. B.: Plasma Removal with Return of Corpuscles, Jour. Pharmacol. and Exper. Therap., 1914, v, 625.

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In the ordinary cases of plasma removal with return of the corpuscles there has been no evidence that the withdrawal of these considerable quantities of blood has a harmful action which is other than temporary. The urine has never become abnormal. It is, of course, not impossible that the resistance of the red corpuscles may be diminished by the change of medium to which they are subjected when the plasmaphaeresis is carried out on an extensive scale. Regeneration of plasma proteins is doubtless accomplished very promptly owing to a large "factor of safety" in this function. Fibrinogen is known to be regenerated very rapidly.[2]

One naturally reverts to the possibilities of application of methods like the one here outlined in human therapy. The Baltimore investigators remind us that centrifugated mammalian blood-corpuscles are said to retain their stability when kept on ice for four or five days and may then be reinjected and function normally.[3] In view of this fact a supply of human corpuscles might possibly be kept in this manner in operating-rooms for rapid injection in emergencies that would otherwise prove fatal.

In still another field, further applications suggest themselves. In the preparation of antitoxic serums, great economy might be effected in the use of horses if the method were found to be applicable, since, instead of bleeding a few liters every two weeks, many more might be taken in the same or even shorter intervals if the animal did not have to regenerate any morphologic elements.

RELATION OF IODIN TO THE THYROID AND OTHER TISSUES

Soon after the discovery of iodin in ever-present though small quantities in the thyroid gland, a search for the element was made in many other organs and tissues of the body. One investigator, Justus,[4] in particular, heralded the widespread distribution of iodin in the animal organism. The quantities reported were extremely small, being expressed in terms of hundredths of a milligram per hundred grams of tissue. This represents a degree of dilution at which methods of chemical analysis must be exceptionally exact and the technic unusually careful to lend any value to data of the magnitude mentioned. Nevertheless physiologists have become committed to the possibilities represented by minute amounts of active substances and the figures recorded by Justus have readily found their way into the literature.

It would not be surprising, after all, if an element as widely distributed in nature as is iodin, even though the absolute quantities are small, were to find its way into various parts of the living organism. When iodids are taken into the body they circulate widely and can be found in various places. The distribution may even be somewhat unlike in different parts of the system.[5] But ordinarily when the intake of iodid ceases, the element soon disappears from the tissues with the exception of the thyroids. In these glandular structures it is retained not in a readily diffusible form or in some loose chemical affinity, but rather in a unique organic combination that leaves no doubt of an active cellular process whereby a new iodin-bearing compound in the tissue results. The iodin becomes an integral part of some of the thyroid protein. This is something quite different from a mere deposition of the element such as occurs when iodids or other halogen compounds are being furnished freely to the individual.

These facts, including on the one hand the reputed widespread occurrence of iodin in the body, and on the other hand the apparently unique capacity of the thyroids to "fix" the element in a functional way, have raised the question as to the specificity of the latter phenomenon. Cannot iodin be "fixed" or organically bound by other cellular structures? Blum and Grützner,[6] who have devoted attention to the problem, conclude that the thyroids stand alone in this metabolic phenomenon among the tissues of the higher animals. Other organs may now and then exhibit the presence of iodin, but its occurrence there in contrast with the thyroids is irregular and uncertain; and it is found derived from the intake and in inorganic relations rather than in special organic combination. Even when iodids are administered freely the formation of iodized proteins has never been observed outside of the thyroid structures. These alone are entitled, in the light of our present knowledge, to claim a content of iodin as something physiologically characteristic. Iodin is therefore presumably not an essential component of every living cell.

THE CONDITIONS OF INDUSTRIAL ACCIDENTS

The enactment of laws in various states on workmen's compensation for injuries has aroused increased interest in the statistics and physical and psychic conditions of industrial accidents. The total number of these accidents is almost appalling. The lowest estimate places the fatal accidents to adult workers in the United States at 35,000 a year, with an additional 1,250,000 non-fatal accidents. The Massachusetts Industrial Accident Board, on the other hand, placed the number of workers killed by accident yearly at 75,000, which apparently includes not only adults, but

2. Whipple and Goodpasture: Am. Jour. Physiol., 1914, xxxiii, 50, 70.
3. Boruttau, H.: Nagel's Handb. d. Physiol. d. Menschen, Ergänzungsband, 1910, p. 32.
4. Justus, J.: Ueber den physiologischen Jodgehalt der Zelle, Virchows Arch. f. path. Anat., 1904, clxx, 501; clxxvi, 1.
5. Loeb, O.: Arch. f. exper. Path. u. Pharmakol., 1907, lvi, 320.
6. Blum, F., and Grützner, R.: Studien zur Physiologie der Schilddrüse, vi, Jodspeicherung und Jodbindung im Organismus, Ztschr. f. physiol. Chem. 1914, xcii, 360.

also workers of all ages, while the number of injured of the same classes was placed by this Massachusetts authority at 3,000,000 or over. An earthquake in a foreign country that kills half this number of persons and maims one-fiftieth of those injured in our United States industries is spoken of as catastrophic.

Among the interesting elements of these accident statistics is the fact that a greater proportion of accidents occurs on Monday than on any other day of the week. Accidents are said to be due often to fatigue. As, after the day of rest on Sunday, workmen should be less fatigued than on other days, some other factor must be sought to explain this feature of the statistics. It has been suggested that the "blue Monday" accidents are really due to the fact that workmen take more spirituous liquor on Sunday, and thus become unnerved and more liable to accidents during the following twenty-four hours. There is, perhaps, something in this contention, though it has been disputed. In the Massachusetts Industrial Accident Board Reports, in which the official figures are given, there is scarcely more than one-twentieth more accidents on Monday than on Tuesday, while Tuesday is not much above the average in the number of accidents reported for other days. Saturday, of course, shows a noteworthy reduction, because of the half holiday in some trades.

By far the larger number of accidents occur at about 10 a. m. and 3 p. m. This fact is confirmed by the reports of two state boards, Washington and Massachusetts, which have secured rather careful records. As they represent the extremes of the country, the conclusions from their statistics would seem to be incontrovertible, though the fact is not what might naturally be expected. The State of Washington Industrial Commission[1] says, "These results seem to disprove the theory that fatigue is the prominent cause of accidents, because accidents are here shown to happen at the hours when the workmen are least fatigued." On the fatigue theory it might naturally be expected that most accidents would happen after 11 a. m. and 5 p. m. The actual hour of the high point of the curve of accidents shows how important are the facts and how necessary of proof the theories.

After much discussion, the tendency to speed up employment has been incriminated, as the predisposing condition for the occurrence of accidents. This desire comes over the workman when he is not yet fatigued, but has been employed for several hours. He starts the morning's work "cold," and as he warms to his work, the danger of mischance because of haste becomes greater. Just when the speeding up reaches a climax in the morning hours, most accidents happen. The same thing is true in the afternoon. Workmen feel sluggish after their lunch, but after an hour of work warm up again, and by about 3 o'clock they are doing their most rapid work, and are at the same time more subject to accident.

With regard to accidents among children, however, there is no hour of maximum. Accidents occur at all times, and they are comparatively much more frequent among children than adults. The United States Bureau of Labor reported that "there is clear evidence of great liability to accident on the part of children. Though employed in the less hazardous work, their rates steadily exceed those of the older co-workers, even when in that group are included the occupations of relatively high liability." This was said with regard to the Southern cotton mills, but the same thing is true of practically all industries in which children are employed.

The results of these accidents come to the physician. We are devoting much time to the prevention of disease, and we should be ready to give attention also to the prevention of injury. Virchow used to say that the ideal function of the physician, besides that of reliever of human ills, is to be the attorney of the poor for the prevention and relief of social ailments, and, above all, the prophylaxis of their physical consequences, whether in lowered health or in maiming injuries.

1. Report of State of Washington Industrial Commission for 1912, p. 178.

CULTIVATION OF LIVING TISSUES OUTSIDE THE BODY

The story of the cultivation of tissues outside of the living body has already lost much of its novelty. Though we can still easily count the time in terms of months rather than years, since the first demonstration of the development in vitro of isolated fragments made up of connective tissue cells, the fact has been established so conclusively and the technic developed so successfully that the cultivation of tissues in this way has already become a familiar practice in many laboratories. It is sometimes said that familiarity breeds contempt; but it may be wholesome at times to renew our acquaintance with the details of well-known scientific procedures and learn their present status. This is particularly desirable in the case of those persons who little realize the persistence and energy, the patience and forethought, which many of the permanent acquisitions of science demand on the part of investigators. We who share the results all too frequently fail to understand the laborious process by which success is attained. In this field the advice once given to an ambitious medical student may be reiterated: "Success is neither luck nor pull, but the longest, toughest job you ever tackled."

Not long ago Carrel[1] of the Rockefeller Institute for Medical Research called attention to the condition

1. Carrel, Alexis: Present Condition of a Strain of Connective Tissue Twenty-Eight Months Old, Jour. Exper. Med., 1914, xx, 1; see also Jour. Exper. Med., 1912, xv, 516. Ebeling, A.: Ibid., 1913, xvii, 273. Carrel, Alexis: Ibid., 1913, xviii, 287.

of a strain of connective tissue kept outside of the organism in a condition of permanent life. It was derived originally from a piece of heart extirpated from a chick embryo. The fragment pulsated for 104 days and gave rise to a large number of connective tissue cells which have since multiplied actively. The strain, after having undergone 358 passages, reached the twenty-ninth month of its life in vitro some time ago. It now appears that the proliferating power has in no wise diminished. During the third year of independent life of the connective tissue we are confronted with the remarkable fact that it shows greater activity than at the beginning of that period, and is no longer subject to the influence of time. Carrel remarks that if we exclude accidents, connective tissue cells, like colonies of infusoria, may proliferate indefinitely.

In this connection it is interesting to note some recent results for human tissues reported from the same laboratory. It has been possible, for example, to keep human fetal tissue, derived from fresh cadavers, in a condition of independent life for several generations.[2] This has led to the attempt to cultivate human sarcomatous tissue in the same manner. The first essay in the direction of growing human malignant tumor in vitro was made in 1911 by Carrel and Burrows.[3] The tissues were kept in a condition of survival for a few days, but no real cultures were obtained. Losee and Ebeling[4] have now succeeded in keeping cultures of such tissue in a condition of active life in vitro for several generations. Their method may therefore prove of value in the study of the growth of human malignant tumor.

THE VIRULENCE OF THE ORGANISM GROWN FROM POLIOMYELITIC TISSUES

Work during the past one or two years in this country and abroad has indicated possible methods for the control of poliomyelitis based on the discovery of mild or abortive cases of the disease. Of still greater importance, perhaps, is the demonstration of the presence of the virus of the disease in healthy persons who have been in contact with cases of poliomyelitis. Previous reference has been made[5] to the great epidemiologic importance of "carriers" of the infection of poliomyelitis who may harbor the infective agent in their nasal mucosa, and yet have shown no symptoms of the disease. The successful cultivation of the causative organism, with the methods of cultivation devised by Noguchi, prompted the hope by students of the disease that we were on the eve of the announcement of the production of methods of active or passive immunization.

It has been established that the only sure method of immunization of monkeys against infection with poliomyelitis is by an attack of the disease, and that injections of emulsions made from poliomyelitic animals, unless followed by an attack of the disease, could not be relied on to immunize. Occasionally it happened, when great care was observed in the process, that an animal was found resistant, but that at times, just when immunity might have been inferred, the animal developed paralysis. From a recent paper by Flexner, Noguchi and Amoss,[6] it appears that somewhat the same experience is had with the organism when grown in cultures, and that successive injections of cultures devoid of virulence do not induce infection or immunity, which is evidenced by the absence of antibodies in the blood and failure to resist infection when active material was used for inoculation. In one series of experiments, it was found that the inoculation of cultures was ineffective at the first, or even second or third inoculation, but was effective at a later injection, although the same material failed to induce infection in a fresh monkey used as a control. The deduction was made that in the course of the successive inoculations, under certain conditions, the resistance of the monkeys was gradually lessened so that infection was finally accomplished.

It is possible that there may be another, or at least partial, explanation for the resistance at times, and a later developed susceptibility. Anderson and Goldberger,[7] in their studies of typhus fever, found a considerable variation in the infectivity for monkeys of different strains of typhus fever blood and, in addition, brought out the important fact that about 22 per cent. of monkeys failed to react to a first injection, and 3.5 per cent. to three or more successive injections of material proved to be infective at the time for other monkeys. As with poliomyelitis virus referred to above, they found that repeated inoculations of typhus virus, unless followed by a typhus reaction, conferred no appreciable resistance to infection. In any case, it is fairly evident, from the results so far reported, that attempts to produce immunity by the use of cultures of the organism of poliomyelitis have not given much promise.

The paper of Flexner, Noguchi and Amoss gives additional evidence of a most convincing kind in support of their contention that the organism grown by them is the specific etiologic factor in epidemic poliomyelitis. It is hoped that further work along the lines of the experiments reported will be continued, and that out of it may come results of value for use in immunization against this dreaded disease.

2. Losee, J. R., and Ebeling, A. H.: Jour. Exper. Med., 1914, xix, 593.
3. Carrel, Alexis, and Burrows, M. T.: Jour. Exper. Med., 1911, xiii, 387.
4. Losee, J. R., and Ebeling, A. H.: The Cultivation of Human Sarcomatous Tissue in vitro, Jour. Exper. Med., 1914, xx, 140.
5. The Entrance of the Infective Agent of Epidemic Poliomyelitis into the Body, editorial, THE JOURNAL A. M. A., Oct. 17, 1914, p. 1396.
6. Flexner, Noguchi and Amoss: Jour. Exper. Med., 1915, xxi, 91.
7. Anderson, John F., and Goldberger, Joseph: Natural and Induced Immunity to Typhus Fever, Jour. Infect. Dis., November, 1912.

Current Comment

PRESENT STATUS OF THE VACCINE TREATMENT OF TYPHOID FEVER

The use of vaccines in the treatment of typhoid fever is still in the experimental stage. Numerous reports have been published on the subject in the last six years, but the results as shown by the death rate are not convincing. One difficulty is that the average mortality rate cannot be accurately determined because epidemics vary greatly in virulence. Some observers report a slightly lower death rate among patients treated with vaccines. Watters,[1] in an extensive review of 1,120 such cases, reports that the mortality is slightly lowered with vaccines, that the duration of fever averaged ten days less than in cases treated as usual, and that the percentage of relapse is diminished. In addition, the patients appeared brighter mentally, showed less depression and had lower temperature than ordinarily. All authors represented in this series agreed that the vaccines (bacilli killed by heat and injected subcutaneously) at least did not harm. It appears from the statistics that the dosage of the vaccines used has very little effect on the fever curve, leukocyte count or the mortality rate. As many deaths are reported with small doses as with larger ones. Some observers believe that early in the disease the treatment may prove beneficial in relieving the symptoms, whereas after the fourteenth day no such effect is obtained. On the other hand, striking results are announced by Ichikawa[2] from intravenous injection of sensitized bacteria. Living bacilli were treated with serum from typhoid convalescents, then washed, and finally suspended in salt solution with 0.3 per cent. phenol. In his cases he was able to produce a sudden drop in fever to normal, after a slight initial rise, and rapid retrogression of symptoms. He found that his typhoid vaccine was effective also in paratyphoid fever. The results reported by Ichikawa are so striking that further investigation is indicated. R. Kraus[3] also mentions the occurrence of crisis and rapid recovery after the intravenous injection of typhoid vaccines in typhoid fever. Ichikawa explains his results by saying that in typhoid fever only a small amount of antibodies is produced, so that not all the bacteria are killed. By the sudden injection of a large number of sensitized bacteria, the production of antibodies is greatly increased and all the bacteria are killed. In the ordinary subcutaneous injections, the introduction of the bacteria into the blood stream is retarded by local reactive processes, and consequently there is not produced the sudden stimulation necessary for the production of so large amounts of antibodies as might be expected. Recenly Gay and Claypole[4] have described a specific hyperleukocytosis on injection of typhoid bacilli in animals already immunized with this bacillus. These investigators also obtain a sharp specific leukocytosis with sensitized cultures in normal animals. Probably the explanation of the prompt effect described by Ichikawa in typhoid fever patients injected with sensitized vaccine is to be found in a specific hyperleukocytosis. Certainly this appears a much more likely explanation than the very complicated one advanced by Garbat.[5] The question of the occurrence of hyperleukocytosis in typhoid patients injected with typhoid vaccine will have to be determined, however, before any definite opinion can be formed as to the mechanism of the action of sensitized or other vaccine in typhoid fever.

1. Watters, W. H.: Med. Rec., New York, 1913, lxxxiv, 518.
2. Ichikawa: Ztschr. f. Immunitatsforsch. u. exper. Therap., 1914, xxiii, 32.
3. Kraus, R.: Wien. klin. Wchnschr., 1914, xxvii, 1443.
4. Gay, F. P., and Claypole, E. J.: Specific and Extreme Hyperleukocytosis Following the Injection of Bacillus Typhosus in Immunized Rabbits, THE JOURNAL A. M. A., June 21, 1913, p. 1950; Specific Hyperleukocytosis, Arch. Int. Med., November, 1914, p. 663.

THE HARRISON LAW AS APPLIED TO PHYSICIANS

An abstract of the Harrison bill and the regulations thereto appears in this issue, page 532. After three years' discussion, this bill has finally become a law, being signed Dec. 17, 1914, and becoming effective March 1, 1915. Its object is to limit the sale of habit-forming drugs to legitimate purposes by requiring a record of all transactions in such drugs. Any physician who dispenses or prescribes any drug preparations containing opium or coca leaves or any of their derivatives is required to register with the collector of internal revenue of his district and to pay an annual registration fee of one dollar. This is prorated for the period from March 1, 1915, to July 1, 1915, at 34 cents. Physicians dispensing their own drugs must use the blank prescribed by the commissioner of internal revenue in ordering their supplies, and must keep a record of all habit-forming drugs dispensed to patients. Physicians prescribing drugs must sign their full name and give their registration number with the name and address of the patient on each prescription. All persons having such drugs in their possession March 1, 1915, must make an inventory of such drugs showing exactly the amount on hand at that time. This inventory, which must be verified by affidavit, is kept by the individual and is not filed with the commissioner. One important point of controversy between the physician and the druggist is settled by the ruling of the commissioner of internal revenue. Only the original of prescriptions containing these drugs can be filled. The refilling of prescriptions is forbidden. Patients desiring an additional supply of such drugs must procure an original prescription from the physician. The law also requires a general registration of all physicians, dentists, druggists and veterinary surgeons, and only such persons will be allowed to dispense or prescribe these drugs. This law is a legislative experiment. Some time, many regulations and several amendments will probably be necessary before it can be reduced to smooth working order. In the meantime, physicians should at once take two precautions: They should make immediate application to the deputy commissioner of internal revenue of their district for registration, and they

5. Garbat, A. L.: Sensitized versus Non-Sensitized Typhoid Bacteria in the Prophylaxis and Treatment of Typhoid Fever, THE JOURNAL A. M. A., this issue, p. 489.

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should make an inventory of all drugs and drug preparations in their possession containing opium or cocain, so that when the law goes into operation, March 1, each physician may have written evidence of the amount of these drugs in his possession at that time. Whether or not it will be possible to put so sweeping a measure into effective operation in so short a time remains to be seen; but physicians can give material assistance in the enforcement of the law, and can relieve themselves of any danger of embarrassment by taking these two steps at once.

HOSPITAL EFFICIENCY

In May, 1914, the Philadelphia County Medical Society appointed a committee[1] to consider "ways and means by which the efficiency of the hospitals in Philadelphia may be increased." This committee made an extensive study of the hospital situation in Philadelphia. The three reports of the committee embodying the results of this study, together with an introduction on "The Principles of Hospital Efficiency," by the secretary of the committee, are now issued in pamphlet form. One of the most important findings of the committee is that no standards as yet exist by which the efficiency of a hospital may be measured. The operating expense of one institution may be three dollars a day for each patient, and that of another, little over a dollar a day for each patient. Is the latter figure a credit or a disgrace? One dispensary physician may treat twice as many patients in an afternoon as his colleague working under the same conditions. Which one is accomplishing the most good? Standards of efficiency must be formulated and applied before such questions as these can be answered. Naturally, this lack of standards is reflected in chaotic conditions. For instance, the committee made a careful study of the record systems used in sixteen of the largest hospitals in Philadelphia. In eight of these, some systematic effort was being made to secure the completeness and accuracy of the records, the chief resident physician or the registrar finally checking the records. Four different systems of classification were being used in these eight hospitals. Only three of the sixteen hospitals were maintaining separate files for recording all operations performed in the hospital, grouping together all operations of like character, so that the number of all operations performed during a given period, with the results of each, could be quickly ascertained. The committee states that in 31 per cent. of the hospitals visited, the records were so kept as to be useless for scientific purposes. A number of recommendations are made for the improvement of record systems, the establishing of social service departments, the prevention of dispensary abuses, etc. In fact, the report contains many valuable suggestions for those who are interested in the improvement of hospitals, and deserves to be widely read.

1. This committee was composed of Dr. Edward Martin, chairman, Dr. Charles B. Penrose, Dr. George E. de Schweinitz, Dr. William Krusen and Dr. John D. McLean. Copies of the report may be obtained from the secretary, Mr. Richard Waterman, 207 South Twenty-Second Street, Philadelphia, 2 cents being enclosed for postage.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Dinner to Dr. Steele.—Friends of Dr. Daniel A. K. Steele, dean of the Medical School of the University of Illinois, Chicago, gave a dinner in his honor, February 1, at the Hotel La Salle, at which about ninety were present. Dr. Charles S. Bacon presided as toastmaster.

Personal.—County Judge Scully has named the following advisory commission to assist in the hearing of lunacy cases in Cook County: Drs. Hugh T. Patrick, Peter Bassoe, and Harry L. Pollock, Chicago.——Dr. John B. Murphy, Chicago, was elected president of the Wisconsin Society of Chicago at the annual meeting, January 26, and Drs. Albert J. Ochsner and Edwin B. Tuteur, Chicago, were elected vice-presidents.

Tuberculosis Institute Meeting.—The ninth annual meeting of the Chicago Tuberculosis Institute was held January 28, and the following officers were elected: president, Dr. Theodore B. Sachs; vice-presidents, Dr. Robert H. Babcock and Mr. George W. Perkins; secretary, Mr. Sherman G. Kingsley, and treasurer, Mr. David R. Forgan. The institute passed a resolution opposing the proposed plan of incorporating the Municipal Tuberculosis Sanatorium in the consolidation bill, commending the efficient management of the board of directors of the sanatorium, and expressing its "emphatic opinion that the best interests of the tuberculosis problem in Chicago demands a continuance of the present administration arrangements of the Municipal Tuberculosis Sanatorium, and that the municipal tuberculosis sanatorium law be allowed to remain unchanged."

Foot and Mouth Disease Injunction Dissolved.—It is reported under date of February 2 that Judge Irwin of the Kane circuit court has dissolved the injunction prohibiting the slaughter of stock on account of the foot and mouth disease. At the annual convention of the Milk Producers' Association in Chicago, February 1, protest was made against the method of handling the disease by the federal and state officials, and particularly against the action of Governor Dunne in placing large dairy areas of the state under quarantine. It is said that from 3,000 to 4,000 cans of milk which daily come to Chicago are kept out by the action of the governor. The health commissioner, Dr. George B. Young, is reported to have asked Governor Dunne to rescind his action, the health commissioner promising to place at least fifteen inspectors on the work of inspection covering the prohibited area.

Chicago

Council Committee Approves Marriage Test Law.—The Chicago City Council Committee of Health on January 22, recommended the approval by the council and the enactment as a law of the bill providing that it shall be unlawful for any county clerk to issue a marriage license unless the applicants file a certificate, fifteen days before the issuance of the marriage license, that they are free from venereal disease.

Warning to Chicago Physicians.—A young man, possibly 25 years of age, giving various names and representing himself as a young medical graduate, has been calling on physicians and others, representing himself to be a Belgian refugee. He is very successful in gaining sympathy, and as a result has succeeded in getting money from many physicians, as well as from others. One of his stories is that he has an uncle, a surgeon, whose name is similar to that of the physician on whom he calls.

INDIANA

Isolation Hospital Secured.—The city health board of Indianapolis has purchased property owned by the Indianapolis Kindergarten Society, opposite the City Hospital, to be used as a ward for contagious disease.

State Eugenics Law.—Senator Neal's amended bill to provide a physical examination for bridegrooms was passed in the upper house by a vote of 32 to 12, January 21. The original bill required that the bride-to-be should also be required to present a health certificate before a license could be granted.

Tuberculosis Foes Meet.—At the annual meeting of the Indiana Society for the Prevention of Tuberculosis, held in Indianapolis, January 21, all the officers were reelected. Resolutions were unanimously adopted in both branches of the legislature, January 20, providing for the setting aside of the first Friday in October, as disease prevention day.

Personal.—Dr. Charles LeRoy of the staff of the Northern Hospital for the Insane, Long Cliff, has entered the United States Public Health Service, with station at Kansas City. ——Dr. Sidney G. Cortner, Otisco, was severely burned on the face and hands by an explosion of acetylene gas in his garage, January 6.—Dr. Samuel Hollis, Hartford City, is reported to be critically ill.

Amendment to Advertising Law.—In the legislature a bill has been introduced as an amendment to the pure advertising law. The amendment provides a minimum fine of fifty dollars for any advertising which is false or fraudulent, or which has a tendency to deceive the public or to impose on credulous or ignorant persons and so to be harmful or injurious to public morals or safety. If this amendment be passed it will eradicate most of the patent medicine manufacturers and advertising physicians in Indiana.

Medical Legislative Problems.—A spirited fight has taken place during the last week in the state legislature on two medical problems. The first, as to whether the chiropractors shall be recognized to the extent of giving them a state board of chiropractors or not. The committee in charge of this work has made a divided report on the same and the matter will have to be fought out on the floor of the legislature.—— Second, the bill originated and authorized by Dr. John N. Hurty, Indianapolis, secretary of the State Board of Health providing for health officers who devote their entire time to the work is being antagonized by another bill which makes it optional with the county as to whether the health officer devotes his entire time or only part of it to the work. A conclusion has not yet been reached.

MARYLAND

Personal.—Dr. N. E. Berry Oglehart, Baltimore, entertained the Medical Dinner Club at his home in Baltimore, January 16.——Dr. Samuel A. Nichols, Dayton, is reported to be seriously ill with pneumonia.

Scarlet Fever Prevalent.—St. Mary's parochial school, Illchester, has been closed by order of Dr. W. H. Gassaway, health officer, owing to an outbreak of scarlet fever among the pupils. Nine cases of the disease have developed. An outbreak of the same disease in an institution for children in Baltimore has led Dr. Nathan R. Gorter, health commissioner, to issue a warning against the disease. The fever has entered the city from the counties and seemed to be spreading from East Baltimore to West Baltimore. Dr. Gorter was notified of the outbreak in the institution by Dr. John F. Hogan, superintendent of Sydenham Hospital, Baltimore, who was asked to care for the children who had developed scarlet fever. He, however, had to decline owing to the situation in other parts of the city.

Health Exhibit Arranged.—A special exhibit in connection with Public Health Week opens on February 6 in the Medical Library, Baltimore, showing the old and the new methods of caring for the insane, prepared by the Sheppard and Enoch Pratt Hospital; an exhibit on "Patent Medicines and Other Frauds," a Health Department exhibit; also the work of the Public Athletic League and the Maryland Workshop for the Blind, and finally an exhibit of lifesaving machines by the Life Saving Devices Company. The Medical and Chirurgical Faculty has offered a prize of $10 to any person, not a physician, for the best essay of not over 1,500 words on "What I Learned from the Health Exhibit." Another prize of $10 is offered to all pupils of the secondary schools of the city on the same subject.

MASSACHUSETTS

Cutter Lectures.—The Harvard Faculty of Medicine has announced that the Cutter series of lectures on preventive medicine will be delivered by Dr. Victor C. Vaughan of the University of Michigan and Surgeon Joseph Goldberger, U. S. Public Health Service.

Health Officials Die.—Charles E. Davis, Jr., for nearly forty years secretary of the Boston Board of Health, died January 5, in a hospital in Montreal.——Thomas J. Lally, director of public health of Salem, is said to have committed suicide in a hotel in Lynn, January 21.

Boston Board of Health.—The city council has given its approval of Mayor Curley's plan to reorganize the Board of Health as a single commissioner, as has been done in the State Board of Health. The mayor's candidate for this position is P. A. Surgeon Richard H. Creel, U. S. Public Health Service.

Organize Against Cancer.—A meeting was held in Boston, January 17, of physicians and laymen with the object of educating the public in the prevention of cancer. Dr. J. Collins Warren presided at the meeting. It is proposed to open an office, prepare literature for distribution, and provide lectures to address organizations throughout the city.

State Board of Health.—The new health commissioner of Massachusetts has appointed, with the approval of the Council, four of the former employees: X. H. Goodnough, chief engineer; H. W. Clark, chemist; William C. Hanson, Boston, records; and Herman C. Lythgoe, foods and drugs. Prof. Theobald Smith, Boston, being unable to remain as pathologist, Prof. Milton J. Rosenau, Boston, has been given that position, necessitating the appointment of another man to fill his place in the council. Dr. Eugene R. Kelley of Seattle, Wash., takes the division of communicable diseases.

Personal.—Dr. Theobald Smith has been invited to come to Illinois to study the foot-and-mouth disease and suggest means for saving the affected herds.——Dr. Wilson G. Smillie, Boston, has been appointed assistant in preventive medicine and hygiene at Harvard Medical School.——Dr. William J. Delahanty, Worcester, has been appointed trustee of the Worcester State Hospital in place of Dr. Samuel B. Woodward, resigned.——Dr. Wilfred E. Roumseville has been appointed city physician for Attleboro.——Dr. Thomas F. Joyce has been appointed resident physician at the Lawrence City Home.——Dr. N. Emmons Paine, West Newton, has been appointed trustee of the Westboro State Hospital. ——Dr. Elizabeth A. Carleton, founder and president of the Home for Aged Couples, Boston, was reelected president of the institution at its annual meeting, January 12.——The Holyoke Association for the Prevention and Relief of Tuberculosis, at its annual meeting, January 11, reelected Dr. Carl A. Allen, president, and elected Drs. George L. Taylor and Julia Bauman, vice-presidents.——Dr. John J. Dowling has been elected superintendent of the Boston City Hospital, vice John H. McCollom, retired.——Dr John D. Adams has been elected president; Dr. Frederick C. Cobb, vice-president, and Dr. Elmer W. Barron, secretary-treasurer, of the medical staff of the Boston Dispensary.

NEW YORK

Antivaccinationists in Albany.—The Albany *Times* of January 27 contained a half-page article headed "Urgent Vaccination Warning," signed and paid for as an advertisement by Charles M. Higgins, treasurer of the Anti-Vaccination League of America, calling on the friends of the league to oppose legislation proposed in the state legislature, which it is asserted takes the authority to order vaccination from the the local school authorities and places it in the boards of health. The article contains the usual misinformation concerning the dangers and accidents of vaccination, and ignores all facts as to the efficacy of vaccination. It calls for an "amendment to the constitution for medical freedom," and demands specifically that all compulsory vaccination be prohibited and that all "vaccinating doctors and members of medical societies" be removed "from the head of the departments of health and vital statistics and place able laymen in their places with honest doctors and statisticians under them," etc. The "warning" is addressed to all "public, private and parochial schools in the state."

New York City

Harvey Society Lecture.—The eighth lecture of the Harvey Society series will be given at the New York Academy of Medicine, February 13, at 8:30 p. m., by Dr. John A. Fordyce on "Some Problems in the Pathology of Syphilis."

Personal.—Dr. Abraham Jacobi made the address before the People's Institute and the American League to Limit Armaments at Cooper Union, January 25. He was of the opinion that it would be well for this country to have a secretary of peace instead of a Secretary of War.——As the result of a competitive examination for the director of public health education, Dr. Ira S. Wile secured first position; Dr. Winthrop Talbot, Flushing, second; and Dr. Charles F. Bolduan, third.

OHIO

Honor Oldest Member.—In honor of Dr. Isaac Kay, Springfield, the oldest member of the Clark County Medical Society, a banquet was given in his honor, January 25, at Springfield. Dr. Kay was presented with a silver loving cup on behalf of the society by the president, Dr. John J. Moore, South Charleston.

Personal.—Drs. Joseph C. Placak and Archibald N. Dawson have succeeded Drs. John H. Lowman and Robert H. Bishop, Jr., as members of the visiting staff of the tuberculosis department of the Cleveland City Hospital.——Dr. Harry B. Blystone, Columbus, was operated on for appendicitis at Washington, Ia., recently, and is reported to be doing well.——Dr. Daniel L. Mohn, Ashland, fell on a slippery sidewalk, January 22, sustaining a severe contusion of the hip.——Dr. Addison D. Hobart, Toledo, was operated on in the Jewish Hospital, Cincinnati, January 15, for the removal of gall-stones, and is reported to be doing well.——Dr. Myron S. Clark, Mentor, was operated on in Johns Hopkins Hospital, Baltimore, recently.——Dr. James B. Ray, Scioto, is reported to be seriously ill with disease of the gall-bladder.——Dr. Harry B. Harris, Dayton, has been elected president, and Dr. George P. Dale, Dayton, secretary, of the staff of the Miami Valley Hospital, Dayton.——At the annual meeting of the People's Hospital Company, Akron, Dr. William S. Chase, Akron, was elected president and chief of staff and Dr. George M. Logan, Akron, secretary.——Dr. Ira J. Mizer has been appointed a member of the Municipal Civil Service Commission of Columbus.——Dr. Wilbert A. Hobbs, East Liverpool, fell on the ice in that city, December 23, fracturing his right clavicle.

Cincinnati

Personal.—Dr. Clifford C. Kennedy has resigned as assistant superintendent of the Cincinnati Tuberculosis Sanatorium and has opened an office in Cincinnati.——Dr. Ellis R. Bader, assistant receiving physician at the Cincinnati City Hospital, has been appointed receiving physician, vice Dr. Charles J. McDevitt, resigned to enter the U. S. Public Health Service.——Dr. William J. Manning has been elected state medical examiner of the Catholic Knights of Ohio.——Dr. Edwin M. Craig, Norwood, was injured January 2, in a collision between his automobile and an interurban car.——Dr. and Mrs. Edward S. McKee, who have been abroad for two years, have returned.

PENNSYLVANIA

Vistors to Pittsburgh.—Dr. Simon Baruch, New York City, was given a luncheon at the Fort Pitt Hotel, January 20, by the Civic Club of Allegheny County, at which he delivered an address on "The Economic Value of Public Baths." On January 21 Dr. Baruch was the guest of the medical profession of Pittsburgh and was entertained by the College of Physicians, and in the evening he delivered an address.——Dr. Abraham A. Brill, New York City, was the guest of the Montefiore Clinical Society, Pittsburgh, January 25, and read a paper on "Psycho-Analysis; Its Scope and Limitations."

Philadelphia

Portraits Presented.—At a stated meeting of the College of Physicians, February 3, a portrait of Dr. Réné La Roche was presented on behalf of the donor, Mr. J. Percy Keating, by Dr. William J. Taylor, and a portrait of the late Dr. Louis A. Duhring was presented by Dr. David Riesman.

Personal.—Dr. S. Lewis Ziegler has been appointed director of the Department of Public Health and Charities, vice Dr. Richard H. Harte, New York City.——Powell F. Fenton, son of Dr. Thomas H. Fenton, sailed, January 30, for France, where he will become attached to the engineer corps of the American Ambulance Hospital of Paris.

Demand New Hospital.—At the annual meeting of the Philadelphia County Medical Society, January 20, resolutions were adopted declaring that the present Philadelphia General Hospital is inadequate, and if permitted to continue without alterations will endanger the prestige not only of the state, but the medical profession, and demanding that councils make available $1,000,000 for the reconstruction of the building. A committee, consisting of Drs. William H. Walsh, Charles A. E. Codman, Herman B. Allyn, W. M. Late Coplin, and William L. Rodman presented the resolution to the councils.

SOUTH CAROLINA

Contracts to Care for Sick of Charleston.—A communication from the Medical Society of South Carolina to the city council of Charleston offering to renew the contract between the city and the society for the treatment of the pauper sick at the Roper Hospital, for a five year period for $40,000 a year, was approved by the city council, December 31. The present contract calls for an annual payment of $37,000.

Personal.—P. A. Surg. R. M. Grimm, U. S. P. H. S., has arrived in Spartanburg to take charge of the Federal Pellagra Hospital, succeeding P. A. Surg. R. A. Herring, transferred to New Orleans.——Dr. Joseph O. Wilhite, Anderson, has been reelected chairman and Dr. John B. Townsend, Anderson, secretary of the medical directors of the Anderson County Hospital.——Albert W. Todd, Charleston, has been appointed a member of the board of trustees of the Medical College of South Carolina, succeeding Dr. William A. Tripp, Easley, resigned. Dr. Robert S. Cathcart, Charleston, previously appointed, declined to accept.——Dr. Frank D. Mower, Newberry, has been appointed assistant physician to the State Hospital for the Insane, State Park, succeeding Dr. Angus B. Patterson, resigned.——Dr. Edgar A. Hines, Seneca, has been appointed superintendent of the Anderson City Hospital.

TENNESSEE

Small-Pox, Not Plague, at Chattanooga.—Public Health Reports, Jan. 29, 1915, contains a report of an investigation by government physicians of the conditions at Chattanooga, from which point plague was reported. Instead of plague, the investigators found that the trouble at Chattanooga was small-pox of a virulent form, undoubtedly brought from Mexico. It is said that virulent small-pox is being continually imported from Mexico into the states bordering on that country, and has also reached points in Oklahoma and Arkansas. The policy of denial of the presence of disease, which has been followed in some places, is deprecated in the report of the government investigators, who say that this course creates in the minds of people of neighboring communities fear and dread out of all proportion to the real danger, and results in unnecessary and injurious quarantine against communities having the infection. The virulent infection in Chattanooga started from a man who arrived from El Paso, Tex., Nov. 9, 1914, suffering from a severe case of small-pox, from which he died. Two other cases of confluent small-pox developed in the same house. The total number of cases from November to January 15 was 56, with 16 deaths, a fatality rate of 28.6 per cent. In December there were 38 cases, of which 13 patients died. From January 1 to 15 there were 15 cases with 2 deaths. Most of the fatal cases were of the hemorrhagic type. With the exception of the cases of varioloid, all of the cases have been of the hemorrhagic or confluent type.

WISCONSIN

Laboratory for Superior Physicians.—At the last meeting of the Douglas County Medical Association at Superior, it was decided to purchase or rent a building to be used by the physicians of the city for laboratory and research work.

Hospital Social Service Department.—A social service department has been established in the Children's Free Hospital in Milwaukee in charge of Gertrude Martin, who in addition to a nurses training has had three years' experience in the Boston Dispensary. Cooperation with the visiting nurses of Milwaukee is to be arranged. There are now more than 150 social service departments connected with hospitals and dispensaries in the United States.

Personal.—Dr. John G. Meachem, Racine, celebrated his fiftieth anniversary of his entrance into the practice of medicine, January 25, in that city, by a reception given at the Guild Hall, for physicians of the city and their wives. Dr. Walter S. Haven acted as toastmaster at the banquet which followed and presented Dr. Meachem with a gold watch as a token of affection.——Dr. George A. Pugh, Kenosha, has recovered $3,000 damages against the United States Express Company on account of the death of Mrs. Pugh, Aug. 27, 1912, which was due to a collision between the automobile in which she was riding and a delivery wagon owned by the express company.——Dr. George Keenan, Madison, is reported to be seriously ill with pneumonia.——Dr. Rudolf F. Teschan, has been elected president, Dr. Louis A. Fuerstenau, secretary, of the board of trustees of the Emergency Hospital, Milwaukee.

CANADA

University News.—The standard of the medical matriculation of the Manitoba Medical College has been raised. Beginning with the session of 1915-1916 all students must have standing equivalent to the first year in the science course in the University of Manitoba. The total number of students enrolled in the present session number 176, the freshmen class being forty, including four women. Owing to the war having called away several of the teaching staff, the following appointments have been necessitated: Lecturer in Roentgen rays and electrotherapeutics, Dr. Walter L. Watt; Dr. Boyd, professor of pathology; Dr. Robert D. Fletcher, lecturer in genito-urinary diseases; Dr. Hugh Mackay, lecturer in dermatology; Dr. T. Herbert Bell, lecturer in clinical ophthalmology; Dr. George W. Fletcher, lecturer in clinical otology and laryngology; Dr. Daniel S. MacKay, lecturer in clinical gynecology; Dr. John D. McQueen, lecturer in materia medica and pharmacy; Dr. Alvin T. Mathers, lecturer on contagious diseases; Dr. James A. Gorrell, demonstrator in anatomy. Dr. John O. Todd has been appointed lecturer in theoretical surgery in place of Dr. B. J. Brandson, resigned; Dr. Ernest S. Moorhead has been appointed lecturer in theoretical medicine in place of Dr. William Chestnut, resigned.

Hospital News.—Chilliwack Hospital (B. C.) has had its accommodation almost doubled by the addition of a new wing.——A new wing four stories high and each story provided with balconies, has just been added to the Regina (Sask.) General Hospital. This will provide amply for the overcrowded older portions of the hospital.——Although the financial stringency has been severely felt in connection with Notre Dame, the Western and the General hospitals, Montreal, it is announced that the Western and Notre Dame will be kept open for some time to come; whilst the General is fortunate in its governors having guaranteed sufficient funds for the work of the hospital for three years.——By the opening of the new wing in connection with St. Luke's Hospital, Ottawa, Ont., increased accommodation has been provided to the extent of twenty in each of two wards.——Two new cottages have been added to the Mowat Memorial Hospital for Tuberculosis, Kingston, Ont.——The St. John County Hospital for Tuberculosis at Little River, N. B., is nearly completed. It consists of a main building and two wings. ——The entire staff of the Vancouver (B. C.) General Hospital has agreed to a reduction of salaries of from 5 to 10 per cent., in order that the board of governors may liquidate the deficit of $11,811.75 reported at the end of October.

Personal.—Dr. James A. Crozier, Port Arthur, Ont., in response to a cable from England advising of his appointment as captain in an English regiment, has left for the front. Dr. Crozier saw service as a surgeon in the South African War.——The militia council of Canada has selected the following doctors to proceed at once to England for service in the Duchess of Connaught's Canadian Red Cross Hospital, established on the Waldorf-Astor Estate, Cliveden: Dr. George O. Taylor, Moncton, N. B.; Dr. R. F. Flegg, Ottawa; Dr. Samuel R. Harrison, Minnedosa, Man. Dr. Charles W. F. Gorrell, Ottawa, is commanding officer of this hospital. ——The following Canadian doctors have been selected in response to a request of the war office for immediate service in the Canadian Base Hospital in England: Captain John P. Walsh, Quebec; Lieut. Keith C. Dean, St. Boniface, Win.; Lieut. R. M. Linton, London, Ont.; Lieut. A. L. Jones, Victoria, B. C.; Lieut. M. V. Valliquette, Ottawa; Capt. Ernest R. Selby, Calgary; Captain Lozier, New Brunswick.——Dr. James A. Montgomery, Deloraine, Man., has joined the British Red Cross for active service.——Dr. William E. Home, Victoria, B. C., having offered his services to the British Admiralty, has left for England.——Dr. John A. McCollum, Toronto, is visiting friends in the Canadian Camp on Salisbury Plain, England.

GENERAL

Tri-State Physicians to Meet.—The annual meeting of the Tri-State Medical Society of the Carolinas and Virginia, will be held in Charleston, S. C., February 17 and 18, under the presidency of Dr. Edward C. Register, Charlotte, N. C.

New Supply Table for Navy.—A new supply table for the medical department of the Navy has recently been issued by the Bureau of Medicine and Surgery. This table is intended as a basis for all requisitions from hospital and store stations, as well as ships of the fleet.

International Health Commission to Move.—The International Health Commission, one of the three divisions of the Rockefeller Foundation, will remove in March from Washington to New York City. The object of the removal is the concentration of the work in one central field.

To Guard Health of Passengers.—The officials of the Pennsylvania Railway have instituted a system for the protection of the health of passengers of the lines. The employees in station restaurants and dining cars of the system, numbering 1,100, are examined by the company's physicians each month. Traveling medical inspectors also examine kitchens, cooking vessels and store rooms, and especial attention is paid to the ventilation of cars.

Eradication of Foot and Mouth Disease.—To January 1 over one hundred thousand animals have been slaughtered on account of foot-and-mouth disease. Of these over forty-six thousand were cattle, forty-seven thousand swine and the remainder sheep and goats. Under the urgent deficiency act passed by Congress and signed by President Wilson, January 25, the sum of $2,500,000 is now available to pay the national government's share of the cost of animals destroyed in eradicating the disease. To January 1 the outbreak had cost the government over two million dollars. One million eight hundred thousand dollars of this represents the government's share of the expense of slaughtering the infected herd and reimbursing owners for their loss, of which the government pays half and the states the remainder.

A Warning.—A subscriber writes that a certain Mr. J. H. Hanaford is soliciting subscribers to a bureau called "American Bureau (or institute) of Medical Research," at Indianapolis. THE JOURNAL published a warning concerning this man in September, 1914, after investigation showed that no such institute existed. The purpose of the bureau, the man states, is to receive all medical journals of the world and to make reprints of each individual article, which are kept in stock and sent to subscribers of the bureau on request. The cost of membership is $5 a year. All mail addressed to this bureau is returned. The editor of the *South Texas Medical Record* advises us that this individual has been operating in Texas, naming as sponsors for the bureau of information, Drs. Harvey A. Moore, J. Rilus Eastman and E. E. Wishard of Indianapolis. A letter of inquiry addressed to Dr. Moore brought the reply that he had no knowledge of any such information bureau, but that he had received many letters from different parts of the country asking for information regarding it. Physicians should be careful not to pay money in advance to such doubtful enterprises.

Bequests and Donations.—The following bequests and donations have recently been announced:

Mount Sinai Hospital, New York City, $100,000; St. Luke's Hospital, $25,000; German Hospital, $25,000; New York Eye and Ear Infirmary, $25,000; and Lincoln Hospital and Home, $25,000, by the will of Benjamin Altman.

Seaside Home for Children, New York City, $1,000 by the will of Alexander R. Brewer.

St. Rose Free Home for Incurable Cancer, New York City, $5,000 by the will of Agnes A. Connell.

Washington University, St. Louis, a contingent bequest estimated at more than $1,000,000 for the establishment of an Eye, Ear, Nose and Throat hospital in connection with the institution, by the will of Mrs. William McMillan.

Michael Reese Hospital, Chicago, $1,000 by the will of Simon Yondorf.

Northwestern University Medical School, Chicago, a donation of $27,000 to cover eight full courses, by Mr. James A. Patten, Evanston.

Louisville Anti-Tuberculosis Association, a bequest of $1,000 by the will of Mr. and Mrs. Thurston Ballard for the building, equipping and maintenance of one shack at the Hazelwood Sanatorium.

Hazelwood Sanatorium, $3,310, the net proceeds of the Christmas seal campaign in Louisville.

Philippine Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination, March 2, for bacteriologists and pathologists, for men only, to fill vacancies in this position in the Bureau of Science at Manila, at salaries ranging from $2,000 to $2,500 a year. Applicants must be citizens of the United States, must hold the degree of M.D. or Ph.D., must have had at least one years' training in bacteriological laboratory work and must have had training in immunity and serum therapy.——An open competitive examination for specialists in nervous and mental diseases, March 2, for men only, to fill a vacancy of the Civil Service at a salary of $3,500 a year. The applicants must be thirty years of age, must be graduates of a medical college or school of recognized standing and must have had at least two years' experience in hospitals or institutions for the insane.——An open competitive examination is also announced for medical inspector and surgeon, March 2, for men only, to fill a vacancy in this position in the Philippine service at a salary of $3,000 a year. The

duties are to take charge of the health station at Manila or in the provinces as the Philippine director of health may require and to attend to such surgical work as may be assigned in the Philippine General Hospital. Applicants must be graduates in medicine from a medical college or school of recognized standing and should have at least three years' experience in surgical hospital practice. Persons who meet the requirements and desire these examinations, should apply at once for forms B. I. A. 2, and 2095, to the United States Civil Service Commission, Washington, D. C., prior to March 2.

FOREIGN

Vital Statistics of Madrid.—From the figures just published for 1914, Madrid, with a population of 614,106, had 27.22 births and 26.48 deaths per 1,000 inhabitants. There has been little change in these proportional figures during the last ten years.

Importation of Meat in Italy Temporarily Suspended.—The *Policlinico* states that as cattle plague, swine plague and trichinosis are prevailing in certain countries, especially in the Orient, the importation of animals or meat from the specified countries has been prohibited by the Italian authorities.

Honors to Town Physician.—The town of Tiero in Italy recently commemorated with a banquet and souvenir volume the fortieth year of service of Dr. A. Cisternino as *medico condotto* of the township. A new public dispensary has been named for him and a set of resolutions on parchment was also presented to the "brave and modest man who," it says, "has exalted *la professione medica* to an *apostolato*."

Deaths in the Profession Abroad.—J. W. R. Tilanus, professor of surgery at the University of Amsterdam until he retired in 1893, aged 92. He founded in 1851 a medical weekly in Holland and later was on the editorial staff of the *Nederlandsch Tijdschrift v. Geneesk.* until 1886. He was honorary member of a number of foreign scientific associations, including the French Académie de Médecine, whose list of foreign associate members is limited to twenty. His father was professor of surgery at Amsterdam before him and there is still a Tilanus, a surgeon, on the staff of the medical faculty there.——K. von Kraus, at Vienna, aged 78. ——A. Geyl of Delft, aged 61. Since he was compelled by a severe nervous affection to retire from practice in 1899 he has been collecting data for the history of medicine, especially in Holland, and the results of his research are in press.——K. Liebermann, professor of organic chemistry at the University of Berlin, aged 72.——G. Jochmann, in charge of the contagious disease ward of the Virchow Hospital at Berlin, had general supervision of the conditions in regard to hygiene and prophylaxis of epidemics in the camps of prisoners in the vicinity of Berlin. One of the camp physicians, Dr. Hirschfeld, had acquired fatal exanthematous typhus from the prisoners, and Jochmann contracted the disease in tending him. It proved fatal in two weeks. Jochmann's early death at 40 has put an end to a promising career. He had recently published a manual on infectious diseases in addition to other works.——At the death of Dr. C. del Toro of Cadiz, Spain, in December, the city council, in recognition of his services to the town and province, voted a public funeral with honors and monument as if he had been the chief executive, and ordered his portrait placed in the gallery of illustrious sons of Cadiz and his name given to one of the principal streets of the city.

WAR NOTES

Italian Daily Gives Issue to Red Cross.—The entire proceeds of a recent special illustrated number of the *Giornale d'Italia* in Italy were given to the Red Cross.

War Relief Funds.—Up to January 16, $439,646.01 has been subscribed to the American Red Cross; $171,752.87 to the German Relief Fund; $841,645.82 to the Belgian Relief Fund; $304,344.68 to the American Ambulance Hospital; $101,028.81 to the Committee of Mercy Fund, and $103,513.88 to the Prince of Wales Fund.

Medical Corps from McGill.—McGill University has decided to send a fully equipped field hospital as a part of its medical contribution to the aid of the allies in the European War. There will be 21 medical officers, 43 nurses and a total staff of 210 persons and the hospital will have accommodations for 520 patients.

Needs of War Sufferers.—An appeal has been received from Belgium for anesthetics, antityphoid serum and diphtheria antitoxin.——The committee for the relief of Belgian physicians announces that it has arranged to send a large supply of drugs and medicines at once to be distributed among physicians and pharmacists in Belgium.——Georgia and South Carolina have donated a shipload of food stuffs for the Belgians.

McGill Men on Active Service.—The following medical graduates of McGill University are on duty with the Canadian expeditionary force at camps of instruction, or on the staffs of general hospitals in England and on the continent: Lieut.-Col. Kenneth Cameron; Lieut.-Col. Frederick Gault Finley; Majors Charles Fenwick Wylde and Roland Playfair Campbell; Capts. Allan Coats Rankin, Alexander Mackenzie Forbes, George Shanks, George Graham Corbet, St. John, N. B.; James Caryle Fyshe, George A. Stuart Ramsay, Robert B. William, Charles Harold Robson, Theodore Adolph Lober, Arthur Livingstone Johnson and Louis Wellington MacNutt.

Personal.—Col. Henry R. Casgrain, Windsor, Ont., has been appointed head of the new Canadian Hospital now under construction in France. Colonel Casgrain will have under his command, 7 commissioned officers, 45 nurses and 98 non-commissioned officers and privates of the hospital corps.——Dr. Wesley Earle Drennen, Birmingham, Ala., has been placed in charge of the work of the American Ambulance, Paris, during the absence on leave of Dr. Joseph Blake. ——Dr. Samuel L. Ledbetter, Birmingham, Ala., is chief of staff of the Red Cross Base Hospital, near Paris.——Dr. Henry Matthey, Davenport, Ia., is reported to be one of the two surgeons in charge of the military hospital at Castle Holzen, Ebenhausen, near Munich.

The Work of the Red Cross.—From Aug. 1, 1914, to Jan. 8, 1915, the American Red Cross had sent to Europe 45 surgeons and 150 nurses. The English units are in charge of the American Woman's Hospital, Paignton, Devonshire; the French units are in charge of the hospital at Pau, the Russian units are in charge of a hospital at Kiev; the German units are in charge of hospitals at Gleichweitz and Kosel; the Austro-Hungarian units are in charge of hospitals in Vienna and Budapest, and the first unit sent to Servia is in charge of a hospital in Belgrade.——Funds have been transmitted to aid in the maintenance of the American Ambulance, Paris; the American Woman's Hospital at Paignton; the American Red Cross Hospital, Munich; for the hospitals under the charge of the units sent to Germany and Austria and for the work of the American Relief Clearing House, Paris; for the prisoners' bureau of the International Red Cross Committee at Geneva; for the relief of Belgian refugees in Holland; to aid the Netherlands Red Cross; for the British and French hospitals and the American Mission Hospital in Turkey; for the hospital and hospital work in Beirut, and for the American Red Cross Committee at Pekin, China, and for the aid of Austrian and German prisoners in Siberia.——The supplies forwarded include 772,900 pounds of absorbent cotton; 802,400 yards of gauze; 709,000 bandages; 3,168 rolls of adhesive plaster; 13,965 pounds of anesthetics; 77 cases of drugs and medicines; 35 cases of instruments and accessories; 20 United States Army field medical outfits; 7 sterilizers; 20 cases of disinfectants; 15,000 doses of antityphoid serum; 50,000 doses of tetanus antitoxin; 10,000 tubes of small-pox vaccine; 7,500 blankets; 2,211 shawls; 516 coats; 1,740 sweaters for women and children; 10 barrels of alcohol; 2,638 cases of miscellaneous supplies including hospital garments and dressings and clothing for women and children.

Aid for the Belgian Profession.—The committee of American physicians for the aid of the Belgian profession announces that it is constantly receiving heartrending reports regarding the distress of our Belgian colleagues and their families. In February great suffering from severe weather will be added to their other trials. Arrangements have been perfected by which contributions are being promptly converted into supplies with every assurance that they will reach our destitute colleagues. Two hundred boxes of food have been purchased during the week ending January 30.

The treasurer, Dr. F. F. Simpson, announces the following contributions for the week ending January 30:

Drs. C. H. and W. J. Mayo, Rochester, Minn.	$100.00
Miss Margaret E. Reed, Chicago, Ill.	1.00
Dr. E. L. Neff, Pittsburgh, Pa.	5.00
Dr. F. P. Sprague, Boston, Mass.	50.00
Dr. Caspar W. Miller, Wallingford, Pa.	50.00
Dr. John T. Bottomley, Boston, Mass.	25.00
Dr. Henry W. Frauenthal, New York, N. Y.	25.00
Dr. Edwin Sternberger, New York, N. Y.	10.00
Capt. W. A. Powell, M.C., U. S. A., Nogales, Ariz.	5.00

Dr. Frederick Fraley, Philadelphia, Pa.	10.00
Dr. George W. Ely, Pittsburgh, Pa.	5.00
Dr. Samuel C. Plummer, Chicago, Ill.	5.00
Dr. R. W. Hodges, Baltic, Mich.	10.00
Dr. Ellen A. Stone, Providence R. I.	10.00
Dr. Charles A. Elsberg, New York, N. Y.	25.00
Dr. F. M. Hicks, San Antonio, Tex.	10.00
Dr. Marion Marsh, Worcester, Mass.	2.00
Ohio Valley Academy of Medicine, Bellevue, Pa.	25.00
Dr. M. P. Messinger, Oakfield, N. Y.	2.00
Total	$375.00
Previously reported receipts	$1,791.00
Grand total	$2,166.00
Previously reported disbursements	$1,650.00
Disbursements week ending January 30	440.00
Total disbursements	2,090.00
Balance	$76.00

F. F. Simpson, M.D., Treasurer,
Jenkins Arcade Bldg., Pittsburgh, Pa.

PARIS LETTER

PARIS, Jan. 14, 1915.

The War

THE IMPROVEMENT OF THE MILITARY HEALTH SERVICE

The minister of war has just decided to create a special commission to investigate the service of military hygiene with a view to making all possible improvements. This commission is composed of eighteen members whose technical knowledge and previous experience are a guarantee of the results. The medical profession is represented by Professor Landouzy, dean of the Faculté de médecine de Paris, Dr. Léon Labbé, senator, Dr. Roux, director of the Pasteur Institute, Dr. Vaillard, medical inspector general of the military health service, Drs. Hartmann and Delbet, professors of clinical surgery at the Faculté de médecine de Paris, and Dr. Troussaint, director of the war department health service.

HEART AFFECTIONS IN THE ARMY

At one of the last sessions of the Académie de médecine, Dr. C. Fiessinger pointed out that men with heart affections (myocarditis, paroxysmal tachycardia, mitral insufficiency or stenosis or aortic insufficiency) can undergo considerable fatigue if sustained by a rational treatment with digitalis. Thus a soldier dismissed at the age of 21 for aortic insufficiency returned as an aviator in the middle of August and is still continuing to do aerial reconnoitering. A military surgeon affected with mitral stenosis, made prisoner in Lorraine, returned to the Aisne as soon as he came back to France and passed fatiguing days and nights which caused a dilatation of the heart. He refused the necessary rest and rejoined his post at the end of forty-eight hours. In a previous letter (THE JOURNAL, Jan. 9, 1915, p. 163) I mentioned a series of cases reported by Dr. Aubertin in which men aged from 20 to 30 years went through a campaign without bad results although they were affected with aortic insufficiency.

SECONDARY HEMORRHAGES FROM WOUNDS IN WAR

Dr. Hardouin, substitute professor of pathology and clinical and obstetric surgery at the Ecole de médecine de Rennes, read an interesting paper on this subject before the Société de chirurgie de Paris which completed the discussion recently reported in THE JOURNAL (Jan. 9, 1915, p. 163). To judge by about twenty cases of secondary hemorrhage which he had the opportunity to observe since the beginning of the war, such hemorrhages seem to take place in wounded men who arrive at the hospital deeply infected, from four to eight days after the wound and after a fatiguing journey of three or four days. Most frequently they are caused by lesions of important vessels. In other cases the hemorrhage may be an indefinitely recurring general oozing. No matter to which of these classes the secondary hemorrhage belongs, immediate operation is necessary. Tamponing ought not to be used in any case. The seat of the hemorrhage should be opened up and the two ends of the artery in the wound or in its immediate neighborhood should be tied. High ligature of the principal artery has the disadvantage of being sometimes insufficient and also of endangering the vitality of the limb more than lower ligature. Therefore it should be used only when it is impossible to find and to ligate the vessel near the wound. In the relatively rare cases of generalized hemorrhage, the best treatment is drainage from the lowest part of the wound preventing all stagnation of the septic liquid, reopening of the wound, abrasion of the bleeding tissues and tamponing.

PRIVATE PRACTICE AND THE MILITARY SERVICE OF CIVILIAN PHYSICIANS

The necessities of war have caused a great number of civilian physicians to be drafted into the medical reserve corps. The attention of the minister of war has been called to the fact that many young civilian physicians are stationed in hospitals or military camps in the same city where they live and practice their profession in times of peace. These physicians continue to carry on their private practice while their colleagues, often much older, are called on for service in the army or in distant parts of the country. Not only is this situation unjust; it also does not always permit the drafted physician, especially when his service is at one of the military camps, to detach himself from local demands, and to preserve the professional independence indispensable to military physicians. Consequently the minister of war has decided that in the future physicians of the reserve shall be, as a rule, stationed at some distance from their residence. Physicians who, though released by age from military obligation, are serving voluntarily, may, on the other hand, be stationed in the place where they ordinarily practice if their services are required by the population. In no case shall local physicians be employed in the army camps.

In response to a request expressed by several of those affected by the rule, physicians filling an elective civil office (members of parliament or of general councils) are not to be stationed in the department from which they are elected.

The Campaign Against Alcoholism

August 16 last, the minister of the interior instructed prefects to forbid the sale of absinthe and similar drinks in their respective departments (THE JOURNAL, Sept. 19, 1914, p. 1044). The president of the republic has just signed a decree making permanent this prohibition, which up to the present was limited to the duration of the war.

Another decree has just been signed forbidding the granting of any new license for the sale of intoxicating liquors except those having a basis of wine and titrating less than 23 degrees. Unfortunately this measure is not so radical as it should be, for it contains a clause stating that later decrees will define the exceptions to this rule. It is to be feared that after the war political influences will open the door to numerous abuses which will be labeled "exceptional cases."

It is to be noted that in our country there is a license for each thirty adults. This average is considerably exceeded in certain departments. Thus, the proportion rises to one license for each twenty-two adults in the Seine-Inférieure and to one for each fifteen adults in the department of the Nord and one for each eleven in the Eure. Several years ago the plans of the government comprised the limitation of the number of licenses to one for each 500 inhabitants. Even a ratio of one license to each 200 inhabitants would mean the existence of about 200,000 licenses. At present there are nearly 500,000. Refusal to grant any new licenses is consequently merely the minimum of what is required in the new campaign against alcoholism. No exceptions should be tolerated.

Death of Dr. Suchard

Dr. Eugène Suchard, former substitute professor at the Collège de France, has just died, aged 62. He was born at Mulhouse on the Upper Rhine and after a brilliant course at the Faculté de médecine de Paris, he passed many years attached to the laboratory of Professor Potain at the Charité Hospital. Then for more than twenty years he brilliantly filled the place of Professor Ranvier in the chair of general anatomy at the Collège de France.

BERLIN LETTER

BERLIN, Jan. 5, 1915.

Personal

Prof. J. Rosenthal, formerly director of the physiologic institute at Erlangen, died January 2 at the age of 78. He was a pupil of DuBois-Reymond and became his assistant immediately after taking the state examination. In this position, he joined the faculty in 1862, was made professor extraordinary in 1867, and in 1872 received a call as regular professor to Erlangen, where he spent the rest of his life. His work lay chiefly in the field in which his teacher was a pioneer. He published a general physiology of the muscles and nerves and, together with Professor Bernhardt, a treatise on medical electricity for physicians. Other works treat of the respiratory movements and their relation to the vagus nerve, heat regulation in warm-blooded animals, public and private hygiene, etc.

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The Number of Students in Berlin

In spite of the fact that 1,501 men and 27 women among the Berlin students are in the service of the army, either in the field or in subsidiary positions, such as nursing and the like, the number of students in the winter semester at the university is not particularly smaller than usual. Eight thousand and thirty-five students have matriculated, 7,037 men and 898 women. The number of the latter has relatively largely increased. In the previous winter semester there were only 859 women while the men students numbered 8,200. Of medical students there are 1,798 men and 199 women.

The War

ORTHOPEDIC INSTITUTIONS AND THE CARE OF THE WOUNDED

Attention to the after-treatment of the wounded has already begun with great zeal. All the German cripple hospitals, of which there are more than one hundred, have expressed their readiness to receive the wounded who are in need of orthopedic after-treatment or apparatus and artificial limbs. A large organization is being established for the treatment and future employment of crippled soldiers.

WAR OPERATIONS OF THE IMPERIAL INSURANCE

The president of the Imperial Insurance Office made an address recently giving in general an account of the work which the imperial insurance organization has so far devoted to the tasks of the war. All hospitals, convalescent homes, and lung sanatoriums have been prepared for the reception of the wounded. The insurance societies have offered to devote to the purposes of the war as much as 5 per cent. of their means. As this amounts to about $500,000,000 (2 billion marks), a sum of more than $25,000,000 is available. Of this, about $375,000 have been given to the Red Cross, and more than $250,000 to the committee for providing woolen underclothing for the troops. All those unmarried German sailors who are without work have been assured a home and care free of cost on a large steamship. The sums which have been appropriated for the survivors of those who have fallen have already reached $500,000. An appropriation of $375,000 has been made for the purpose of preventing the lapse of the right to insurance on account of the non-payment of dues by the insured who are in the field. An amount up to $50,000,000 will be loaned out on easy terms to needy communities, societies, etc. The insurance societies have subscribed $37,500,000 for the war loan—a slight evidence that the $1,125,000,000 subscribed to the war loan will be quickly forthcoming.

EXHIBITION SHOWING THE CARE OF THE WOUNDED AND SICK IN WAR

For the instruction of the public regarding the measures which are being taken for the care of the wounded and sick in the war, an exposition was opened in the parliament buildings, under the auspices of representatives of the civil and military medical authorities. All that is being done by the state and by voluntary effort for the care and restoration to health of the wounded and sick soldiers is on exhibition, beginning with the prevention of sickness and the first aid to the wounded on the battlefield, and extending to the convalescent soldier in his home country. The exposition is divided into groups: The first group illustrates the sanitary arrangements for the army in the field. Here one sees the first aid package, closed and open, of which every soldier carries two sewed into his coat, and which are intended for the first care of the wound by the wounded man himself or by a comrade; also the set of articles to be carried in the pocket, the set for the whole troop, the cavalry case and pocket case of bandage material, an instrument case for the hospital, a field Roentgen car, models of hospital tents and barracks. How the business of caring for the wounded is arranged is shown from a large relief map of a battlefield. One sees the medical forces lying on the abdomen under fire, bandaging the wounded and then, still in the field of battle, the sanitary squads, the transportation of the wounded, the work at the temporary dressing station, the gathering places, and the field and base hospitals. How the wounded are transported in motor buses, carts and hospital trains is illustrated by plain models.

The second group depicts the medical work in the navy. For the narrow, steep and crooked passages of a ship, other means of transportation are needed than on land. The best is a transport hammock, shown at the exposition, by which the steep stairs may be avoided by use of rails. The chief attraction of this department is the hospital room of a battleship in its natural size. The bandage rooms are placed in a lower part of the ship, protected as much as possible from the fire of the enemy, and have modern surgical apparatus. The operation table has a special arrangement to keep it steady. Furthermore, the genuine hospital ship with movable beds adapted to the movements of the ship, the so-called swinging berth, is shown. To this the wounded are transferred after the battle. In addition to the space for the sick, there is also an operation room and a drug room, which serves, at the same time, as a clinical and bacteriologic laboratory.

A further group exhibits the means for combating infectious diseases in war, giving pictures and cultures of the various bacteria, showing the method of obtaining serum, tables with regard to the results of vaccination, arrangements for disinfection, a flying laboratory, as well as tables and charts illustrating the spread of and campaign against tuberculosis.

The other departments of the exposition are devoted to the application of the Roentgen rays in the care of the wounded, the work of the dentist in war, the technic of nursing in all its details, and the methods for occupying and amusing the sick, and the organization of nursing in war. In this last department is an exposition of the work of the order of the Knights of St. John and of Malta, and there is also a beautiful model of the Mount of Olives Foundation at Jerusalem which was established under the protection of the order of the knights of St. John (Johanniter).

The department showing the provisions for those crippled in the war illustrates by pictures and models how, with proper care and training, a relatively large number of those who have been maimed can be rendered more or less self-supporting. For example, it is shown that a man who has lost both feet and hands is yet capable of dressing and washing himself without help, eating, writing and working at a lathe in a turner shop. One fine specimen of mechanical work was exhibited done by a man whose right hand had been lost. Other models illustrate the instruction of a cripple in a trade. The historical department of the exhibition gives an interesting view of the historical development of medical military service.

Marriages

WILLIAM RICHARD JANEWAY, M.D., New Brighton, Staten Island, N. Y., to Miss Carol Rodman of Ridgewood Road, N. J., January 20.

GEORGE STANFORD HENSYL, M.D., to Miss Helen Bacon, both of Mahanoy City, Pa., at Mt. Carmel, Pa., January 19.

JOHN ROY WESTABY, M.D., Clark, S. Dak., to Miss Marcia Blanch Eldred of North Pownal, Vt., Dec. 17, 1914.

CHARLES AUGUST RIEMCKE, M.D., North Yakima, Wash., to Miss Lois Steen of Spokane, Wash., Dec. 30, 1914.

MAURICE JACOB GREENSTEIN, M.D., Bridgeport, Conn., to Miss Hattie Singer of New York City, January 17.

ISADORE EMANUEL FREED, M.D., Greensburg, Pa., to Miss Diana Zeldenrust of Allentown, Pa., January 19.

DAVID ALFRED ANGUS, M.D., to Miss Mabel Meuli, both of Rosalia, Wash., at Spokane, Wash., January 15.

FREDERICK WILLIAM MANNING, M.D., Windsor, Ont., to Miss Florence Pfeiffer of Detroit, January 11.

ARTHUR AUGUSTUS RANG, M.D., Washington, Ind., to Miss Gladys H. Halter of Garrett, Ind., January 12.

THOMAS MADISON MORGAN, M.D., Wesson, Ark., to Miss Ella Combes of El Dorado, Ark., January 19.

PAUL J. LANDRY, M.D., New Iberia, La., to Miss Willie Walters of Vicksburg, Miss., in April, 1914.

HENRY SHILLINGFORD MILES, M.D., to Miss Edith Alicia Zink, both of Bridgeport, Conn., January 9.

DUDLEY STEELE CONLEY, M.D., New York City, to Miss Sidney Ann Boales of St. Louis, January 2.

HENRY B. ESMOND, M.D., St. Albans, Vt., to Mrs. Martha J. Herrin of Upper Alton, Ill., January 22.

JAMES LAURENCE SULLIVAN, M.D., to Miss Anna J. Sadler, both of Bridgeport, Conn., January 18.

ORRIL LE GRAND SUGGETT, M.D., St. Louis, to Miss Virginia Parker of Lexington, Ky., January 21.

HENDERY ALLISON, M.D., to Miss Clara Lucille McLoud, both of Kingsville, Tex., January 8.

Deaths

James Morrison Bodine, M.D., noted for his work in medical education in the South; died in the apartment of his nephew in the Atherton Building, Louisville, January 25, from senile debility, aged 83. He was born in Fairfield, Ky., Oct. 2, 1831. His early education was received at St. Joseph's College, Kentucky, and Hanover College, Indiana, and his medical course was taken in the Kentucky School of Medicine, Louisville, from which he graduated in 1854. Two years later he became demonstrator of anatomy and later professor of anatomy in his Alma Mater. He entered the faculty of the University of Louisville in 1866 as professor of anatomy, serving in that capacity for forty-five years. He was dean of the university from 1867 to 1907, and was made president of the faculty in 1907. He was a Fellow of the American Medical Association and for many years served as a member of the Louisville Board of Health. From 1881 to 1886 Dr. Bodine was president of the American Medical College Association. After his retirement from the presidency of the University of Louisville, in 1910, the alumni of the institution and medical friends from twenty states gave a testimonial banquet in his honor. The death of Dr. Bodine marks the passing of one of the old-time medical gentlemen of the South.

William Grant Moore, M.D. Jefferson Medical College, 1875; a Fellow of the American Medical Association, and third vice-president in 1910-1911; formerly president of the Missouri State Medical Association; one of the founders of and professor of theory and practice of medicine and clinical medicine in the Marion Sims-Beaumont College of Medicine, St. Louis; a member of the staff of the St. Louis Protestant and St. Ann's hospitals, and the Missouri Baptist Sanitarium and physician in charge of St. John's Hospital, St. Louis; died at his home in that city, January 28, from pneumonia, aged 61.

Samuel Augustus Fisk, M.D. Harvard Medical School, 1880; a Fellow of the American Medical Association; professor of practice of medicine in the University of Denver from 1884 to 1899; secretary of the faculty for many years and dean for four years; once president of the American Climatological Association; a member of the first board of the Home for Consumptives, Denver, and a member of the staff of St. Luke's and Deaconess hospitals; died at his home in Boston, January 18, aged 58.

Joseph Eve Allen, M.D. Medical College of Georgia, Augusta, 1877; a Fellow of the American Medical Association; dean and professor of obstetrics in his Alma Mater; president of the Augusta Academy of Medicine in 1894 and 1896; for several years a member of the Augusta Board of Health; consulting obstetrician to the Augusta City Hospital and the Lamar Hospital; one of the most prominent obstetricians and gynecologists of the South; died at his home in Augusta, January 19, aged 57.

Levi Francis Warner, M.D. College of Physicians and Surgeons in the City of New York, 1889; a Fellow of the American Medical Association; attending physician to St. Francis' Hospital and physician-in-chief to the New York Dispensary; medical examiner for the Municipal Civil Service Commission and a member of the Board of Police Surgeons of New York City for eight years; died in St. Luke's Hospital, January 20, after a surgical operation, aged 50.

Alonzo Byron Hughes, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1897; a member of the Iowa State Medical Society; for twelve years a member and since 1909 president of the Keokuk Board of Education; formerly professor of chemistry in his Alma Mater and prior to that time, school principal and professor of chemistry in Nebraska schools; one of the most prominent citizens of Keokuk; died at his home, January 16, from diabetes, aged 58.

Ira A. Cottingham, M.D. Eclectic Medical Institute, Cincinnati, 1885; St. Louis College of Physicians and Surgeons, 1890; of Carthage, Mo.; a member of the Missouri State Medical Association; for twenty-four years a practitioner of Aurora, Mo., and for three terms mayor of that city, and local surgeon for the railways centering in Aurora; died in the Carthage Hospital, January 19, from meningitis due to an infection of the middle ear, aged 55.

George Clayton Feigel, M.D. Syracuse University College of Medicine, Syracuse, N. Y., 1898; a member of the Medical Society of the State of New York; visiting physician to St. Joseph's Hospital, Syracuse; who disappeared from his home in Syracuse ten days before, despondent on account of ill health; was found dead in a hotel in Chicago, January 24, from the effects of poison self-administered, it is believed, with suicidal intent, aged 45.

Charles A. E. Lesage, M.D. Northwestern University Medical School, Chicago, 1897; a Fellow of the American Medical Association; once president of the Dixon Medical Association and secretary of the Lee County Medical Society, and a specialist on diseases of the eye, ear, nose and throat, of Dixon, Ill.; a member of the staff of the Dixon Public Hospital; died at his home in that city, January 22, aged 42.

Benjamin Sharp, M.D. University of Pennsylvania, Philadelphia, 1880; later professor of invertebrate zoology at the Academy of Natural Sciences, Philadelphia, and two years later professor of zoology in his Alma Mater; zoologist of Commander Peary's first Arctic expedition in 1901; a scientist of national repute; formerly of Brookline and Nantucket, Mass.; died in Beaufort, N. C., January 15, aged 56.

Adam Monroe Kalbach, M.D. Long Island College Hospital, Brooklyn, 1867; Bellevue Hospital Medical College, 1868; a member of the Medical Society of the State of Pennsylvania, who gave up practice thirty years ago to conduct extensive lumber enterprises in Maryland; died at his home in Lancaster, Pa., January 20, from heart disease, aged 69.

Dabney Minor Trice, M.D. Hospital College of Medicine, Louisville, Ky., 1890; assistant physician to Long Island State Hospital from 1903 to 1908; president and resident physician of Moore's Brook Sanitarium, near Charlottesville, Va.; a member of the Medical Society of Virginia and a prominent specialist on diseases of the nervous system; died January 17, from pneumonia, aged 54.

Ralph Walsh, M.D. University of Georgetown, Washington, D. C., 1863; a Fellow of the American Medical Association and for many years a practitioner of Washington, D. C.; for thirty-five years connected with the National Vaccine and Antitoxin Laboratory; died at his home in Jerusalem, Md., January 15, from paralysis, aged 73.

Albert James Browne, M.D. Berkshire Medical College, Pittsfield, Mass., 1865; a member of the Medical Society of the State of New York; for several terms supervisor of the town of Newton; in 1895 and 1896 health officer of Utica; died at his home in Utica, January 23, from pernicious anemia, aged 74.

James Boone Lincoln, M.D. Jefferson Medical College, 1883; a member of the Medical Association of the State of Pennsylvania; for twenty-three years physician for the relief department of the Pennsylvania Railroad; died at his home in Lancaster, Pa., January 17, from cerebral hemorrhage, aged 56.

John Wesley Gray, M.D. Jefferson Medical College, 1864; Bellevue Hospital Medical College, 1867; a member of the Indiana State Medical Association; surgeon in the United States Indian Service from 1885 to 1888; died at his home in Bloomfield, Ind., January 25, from heart disease, aged 75.

Charles T. Montgomery, M.D. Albany (N. Y.) Medical College, 1874; a member of the Medical Society of the State of New York and one of the best-known practitioners of Ulster County; died at his home in Saugerties, N. Y., January 15, from arteriosclerosis, aged 65.

Lloyd L. Edgell, M.D. Starling Medical College, Columbus, Ohio, 1885; a member of the West Virginia State Medical Association; for several years a practitioner of Keyser, W. Va.; died at his home in Cumberland, Md., January 18, from heart disease, aged 55.

Isaac Shelby Warren, M.D. Kentucky School of Medicine, Louisville, 1870; health officer of Somerset, Ky.; a member of the Kentucky State Medical Association; died in the Somerset Sanitarium, January 15, following an operation for malignant disease, aged 59.

John Adam Person, M.D. Jefferson Medical College, 1888; a Fellow of the American Medical Association and a member of the staff of Nesbitt West Side Hospital, Wilkes-Barre, Pa.; died at his home in Wilkes-Barre, January 19, from diabetes, aged 53.

William Waldo Knowlton, M.D. Hahnemann Medical College, Philadelphia, 1893; of Camden, N. J.; a member of the Medical Society of the State of New Jersey; a specialist in dermatology; died in Philadelphia, January 23, aged 43.

Montague J. Jones, M.D. Medical College of Ohio, Cincinnati, 1871; for several years a practitioner of Peoria; died at his home in Chicago, January 27, aged 74.

Davis Bruce Richards, M.D. Jefferson Medical College, 1896; also a graduate in pharmacy in 1891; a Fellow of the American Medical Association; died at his home in Philadelphia, January 21, from nephritis, aged 47.

Louis P. Pollmann, M.D. Missouri Medical College, St. Louis, 1870; a Fellow of the American Medical Association and for forty-four years a surgeon of St. Louis; died at his home in that city, January 23, aged 64.

Claude Dearborn Warren, M.D. Baylor University, Dallas, Tex., 1905; a member of the State Medical Association of Texas; died at his home in Houston, Nov. 9, 1914, from tuberculosis, aged 31.

John Buchanan Dewar, M.D. Bellevue Hospital Medical College, 1888; a member of the Michigan State Medical Society; died at his home in Cedar Springs, Mich., about January 20, aged 61.

Albert W. Squires, M.D. Columbus (Ohio) Medical College, 1883; a member of the Ohio State Medical Association; died at his home in White Cottage, Ohio, January 15, from pneumonia, aged 61.

John Adolphus McEachern, M.D. University of Louisville, Ky., 1889; a member of the Medical Association of the State of Alabama; died at his home in Brundidge, Ala., January 5, from heart disease.

David W. Beattie, M.D. University of Nebraska, Omaha, 1897; local surgeon at Neligh (Neb.) for the Northwestern System; died at his home in Neligh, January 8, from arteriosclerosis, aged 55.

John W. Cobb, M.D. Albany (N. Y.) Medical College, 1858; a surgeon of volunteers during the Civil War; died at his home in Binghamton, N. Y., January 14, from pneumonia, aged 76.

Henry Russell Lowe, M.D. Dartmouth Medical School, Hanover, N. H., 1883; a member of the Connecticut State Medical Society; died at his home in Putnam, Conn., Nov. 1, 1914, aged 65.

Wiley Thomas Simpson, M.D. Medical College of Georgia, Augusta, 1883; a member of the Medical Association of Georgia; died at his home in Smithville, Ga., January 8, aged 62.

John E. Barrette, M.D. State University of Iowa, College of Homeopathic Medicine, Iowa City, 1886; of Lawrence, Neb.; died in a sanatorium at Lincoln, Neb., about January 10.

James T. Hard, M.D. Albany (N. Y.) Medical College, 1877; resident physician of the Mary M. Packer Hospital, Sunbury, Pa.; died at his home January 12, from erysipelas, aged 65.

Charles Richard Dewey, M.D. University of Michigan, Ann Arbor, 1886; formerly of Olivet, Mich., but recently a practitioner of Lansing; died at his home in Olivet, January 13, aged 56.

P. C. Woodruff, M.D. Louisville (Ky.) Medical College, 1888; a member of the Oklahoma State Medical Association; died recently at his home in Stilwell, Okla., aged 49.

John Damascus Bambenek, M.D. Northwestern University Medical School, Chicago, 1908; died at his home in that city about January 7, from pneumonia, aged 33.

Adelbert Allen Bryson, M.D. Bellevue Hospital Medical College, 1892; died at his home in Dorchester, Boston, about January 15, from heart disease, aged 54.

Erazmus Z. F. Golden, Jr., M.D. Birmingham (Ala.) Medical College, 1912; died at his home in Langdale, Ala., December 24, from acute gastritis, aged 26.

John D. Baker, M.D. American University of Pennsylvania (Eclectic), Philadelphia, 1880; died suddenly at his home in Eshcol, Pa., January 12, aged 71.

William F. Cook, M.D. Hahnemann Medical College, Philadelphia, 1899; died at his home in Port Allegany, Pa., January 3, aged 44.

Charles Edward Anderson, M.D. Trinity Medical College, Toronto, 1908; died at his home in Brooks' Station, Alta., about January 10.

Vincenzo Delpiano (license, Connecticut, 1898) was shot and killed at his home in Norwalk, Conn., by his brother-in-law, January 6.

Henry Clark Bradford, M.D. Bellevue Hospital Medical College, 1893; died at his home in New York City, January 10, aged 50.

Association News

THE SAN FRANCISCO SESSION

Special Trains from Chicago and New York

Arrangements are being made for special trains from Chicago to San Francisco over three different routes. These trains will be designated, the American Medical Scenic Route Special, the American Medical Grand Canyon Route Special, and the American Medical Direct Route Special.

THE AMERICAN MEDICAL SCENIC ROUTE SPECIAL

This train will go over the Chicago, Burlington and Quincy Railroad from Chicago to Denver, and the Denver and Rio Grande, Denver to San Francisco. The party is to be personally conducted. The train will be made up of modern equipment, observation Pullman sleeper, drawing room standard sleepers, dining car and baggage car.

SCHEDULE

Lv. Chicago	9:45 a. m.	June 15
Ar. Denver	1:00 p. m.	June 16
Lv. Denver	Before 12 p. m.	June 16
Ar. Colorado Springs	4:00 a. m.	June 17
Lv. Colorado Springs	4:00 a. m.	June 18
Ar. Glenwood	3:30 p. m.	June 18
Lv. Glenwood	6:30 p. m.	June 18
Ar. Salt Lake	8:30 a. m.	June 19
Lv. Salt Lake	12:00 Noon	June 19
Ar. San Francisco	5:00 p. m.	June 20

Starting from Chicago at 9:45 a. m., June 15, this train traverses the prairie sections of Illinois, crosses the Mississippi at Burlington and during the afternoon goes through the corn belt of Iowa, crossing the Missouri River at Council Bluffs and Omaha. During the night it travels through Nebraska, reaching McCook in the early morning and arriving at Denver at 1 p. m., June 16. Here a stop will be made during the afternoon and evening which will provide an opportunity for sightseeing, and arrangements can be made with the "Seeing Denver Company" to take the party for a ride through the parks and avenues of the "Queen City of the Plains."

Leaving Denver before midnight, June 16, over the Denver and Rio Grande the train is due to arrive at Colorado Springs (75 miles south of Denver) at 4 a. m., June 17. The train is to be parked directly outside the grounds of the Antlers Hotel. Here a number of side trips may be made into the Pike's Peak region by carriage, automobile, etc., to the Garden of the Gods (time for the round trip about two hours; street car fare 20 cents); to Monument Park (about the same time; street car fare 20 cents); across the Mesa to Palmer Park and return, via the Boulevard (about three hours, $1); to Stratton Park (5 miles, street car fare 20 cents); North and South Cheyenne canyons and the Famous Seven Falls (about four hours, street car fare 20 cents, admission 50 cents); the "High Drive," thence down through Bear Creek Canyon and Colorado City, back to Colorado Springs (half a day's trip); to Crystal Park by automobile from either Colorado Springs or Manitou (about four hours, $3). From Manitou, trips can be made to the Cave of the Winds (admission $1); to the Cliff Dwellers ruins (car fare 10 cents, admission $1); incline up Mt. Manitou (street car fare to incline 10 cents, trip $1); Ute Pass and Temple Drive (may be made on foot, 3 miles; two hours' time should be allowed): A party may be made up to start early in the morning for Pike's Peak by way of the cog wheel road. (Pike's Peak, height 14,147 feet. The round trip requires four hours and the fare is $5). The party may return to Manitou and have time to go to the Cripple Creek gold mining district via the "Short Line"—"the one way trip that bankrupts the English language" (cost of trip, $3). For parties of 100 or more, a special train, special schedule, and in some instances, special rates, may be arranged for the trip up Pike's Peak, the Cripple Creek district and some others of the foregoing list. Special accommodations for some of the other trips may be arranged for smaller parties.

Leaving Colorado Springs at 4 a. m., June 18, the train enters the Royal Gorge about 7:30 a. m. The scenery is almost beyond conception in grandeur. Between sheer walls

of granite half a mile high and but 30 feet apart, the train passes to the hanging bridge, and then for hours the road goes through mountain scenery, the grandeur of which is beyond description. The Continental Divide is crossed through Tennessee Pass (altitude 10,240 feet) where streams start both for the Pacific and the Atlantic.

The train is due to arrive at Glenwood Springs at 3:30 p. m., June 18. Here a stop is planned permitting a swim in the open air hot swimming pool (750 feet long, with a depth of from 4 to 6 feet), a unique attraction. Dinner may be obtained at the Hotel Colorado. Leaving at 6:30 p. m., the Palisades are passed at Grand Junction, and the Great Grand River Valley fruit section is entered before dark.

Salt Lake City is reached at 8:30 a. m., June 19. The many fine buildings erected by the Mormons are of interest not only because of the durability of their construction, but also on account of their unique style of architecture. "Sightseeing automobiles" permit travelers in a short time to see the most interesting points in the city. Salt Lake, 70 miles long by 30 wide, and with an average depth of 10 feet, is 4,000 feet above the sea level. On its shore is Saltair Beach, which is 13 miles due west from Salt Lake City and is reached by a thirty-minute railway ride.

Salt Lake City is left at 12 noon, June 19, by the Western Pacific Railway. During the night, the train will cross the salt beds of the Salt Lake desert basin. The salt, in places, is 12 feet thick and almost 98 per cent. pure. The following morning the train will be in the sage country, a region almost virgin in character. Soon the foothills of the Sierras appear in the distance. The beauty of the scenery increases as the summit of this range is approached at Beckwith. The train enters along the rock walls of the Feather River Canyon, a 90 mile long gorge, where the rails are laid on a shelf chiseled from the solid rock along the side of the canyon. Alternate views of the river, meadow, glen and valley present themselves until the train arrives at Oroville, at the western end of the canyon. This is said to be the center of the largest gold dredging district in the world. Then the road passes down the western slope of the Sierra Nevadas into the Sacramento Valley through the capital city of California and the center of the great fruit growing industry of that section, crosses the northern portion of the Rich San Joaquin Valley and spans the little valleys of Livermore, Pleasanton and Niles, and passing through Oakland, arrives at San Francisco at 5 p. m., Sunday, June 20.

It will be noted that the entire trip—through the mountains, the Royal Gorge, across the Continental Divide, through Glenwood Springs, past Grand Junction and through the Feather River Canyon—is made in daylight, and that the party arrives in San Francisco in the early evening.

NEW YORK AND NEW ENGLAND SPECIAL

This train will be under the management of McCann's Tours. The itinerary is planned to provide a fast schedule, over an interesting route for the outward trip, leaving eastern points as late as the afternoon and evening of June 16 and getting to San Francisco on Sunday evening, June 20. The return trip will be made in a leisurely manner over an interesting scenic route, including a trip from San Francisco to Portland by way of the Shasta line. Stops will be made at Portland, Seattle and Spokane, and a five day trip through the Glacier National Park is planned. The itinerary, as has been noted, contemplates leaving New York at 2 p. m., June 16, over the New York Central lines, thence by way of the Chicago, Milwaukee and St. Paul, the Union Pacific and the Southern Pacific to San Francisco, where the party will stop from Monday, June 21 to Friday, June 25, leaving San Francisco at 8 p. m. on the last-named day. From Wednesday, June 30, to Sunday, July 4, the party will be in Glacier National Park, returning to New York on Thursday, July 8.

Those who do not have time or are not disposed to return by the route indicated, may arrange to take the special train to San Francisco and to return within three months after the date of starting, by any authorized route selected.

A description of other special trains will appear in future numbers of THE JOURNAL.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

TRI-IODIDES, THREE CHLORIDES AND MAIZO-LITHIUM

Report of the Council on Pharmacy and Chemistry

As an illustration of unreliability of claims and unscientific character of proprietary mixtures, the Council has authorized publication of the following reports on Tri-Iodides, Three Chlorides and Maizo-Lithium, products of the Henry Pharmacal Co. (J. F. Ballard, proprietor).

W. A. PUCKNER, Secretary.

Tri-Iodides (Henry)

Tri-Iodides (Henry Pharmacal Co., St. Louis) is a nostrum whose ingredients apparently were selected at random. Since the effects of such a mixture cannot be predicted, no thoughtful physician would think of prescribing in any one condition all the drugs named in the formula of Tri-Iodides—if he had to write out the prescription. Yet because the misleading name of the preparation gives it the semblance of a therapeutic entity—and because it is advertised in medical journals—a certain number of physicians thoughtlessly prescribe this shotgun mixture.

LABORATORY REPORT

Regarding the composition of "Tri-Iodides" the Association's Chemical Laboratory makes the following report:

A trade package of Henry's Tri-Iodides purchased in 1910 bore the following formula on the label:

"Colchicin, 1-20 grain,
"Phytolaccin, 1-10 grain,
"Solanin, 1-3 grain,
"Sodium Salicylate, C. P., 10 grains,
"Iodic Acid, (equal to 7/32 gr. of Iodine) in two fluid drachms of Aromatic Cordial."

In the circular which was wrapped with the bottle the wording of the formula differs somewhat from the foregoing, "iodic acid" of the label being replaced by "hydro-iodic acid." While the label on the bottle named "phytolaccin" as one of the constituents the label on the carton which contained the bottle gave "decandrin." The following formula appears on a trade package purchased June, 1914:

"Colchicine, 1-200 Grain,
"Phytolacca, 1 1-5 Grain,
"Mydriatic Alkaloids, 1-500 Grain,
"Sodium Salicylate, 3 1-2 Grain.
"Iodic Acid (equal to 7-125 Grain of Iodine) in two fluid drachms."

The differences between the formulas are striking. Colchicin has been reduced from $^1/_{20}$ grain to $^1/_{200}$ grain; sodium salicylate from 10 grains to 3½ grains; iodin (claimed to be present as iodic acid) from 7/32 grain to 7/125 grain. "Phytolaccin" ("Decandrin") has been replaced by "Phytolocca" and "Solanin" by "Mydriatic Alkaloids." While the formula for the preparation has been changed, the circular accompanying the package still refers to "solanin" (in some parts of the circular wrongly spelled "salonin") and "phytolaccin." As no principle having the characteristic effects of poke-root is known to have been isolated the terms "decandrin" and "phytolaccin" are meaningless.

The circular states that solanin is an alkaloid obtained from the sprouts of *Solanum tuberosum*, but wrongly calls this plant "bittersweet" instead of potato. At the market price the amount of solanin claimed, according to the old formula, to be present in a bottle of Tri-Iodides, would cost $1.60, although a bottle of the preparation sold at wholesale for 67 cents.

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Tri-Iodides is a dark brown, mobile liquid having a faint clove-like odor and a mawkish, sweet taste. Salicylate was found in considerable amounts. Traces of alkaloids were found, a portion of which appeared to be colchicin. Iodic acid and its salts were absent, although claimed by the formula to be present. Potassium iodid was present. Determinations of the iodin by distillation with ferric ammonium sulphate solution and sulphuric acid indicated the presence of about 1.68 gm. of iodin (equivalent to 2.18 gm. of potassium iodid) in each 100 c.c. of the preparation. This is equivalent to about 7.65 grains of iodin per fluidounce, or more than thirty-four times the amount claimed by the formula on the bottle. An approximate determination of the salicylic acid by extraction of the acidified preparation with ether and evaporation of the solvent indicated about 2.67 gm. in 100 c.c., equivalent to 3.09 gm. of sodium salicylate, or about 14.11 grains per fluidounce. Since the amount of sodium salicylate claimed is 3.5 grains in 2 fluidrams or 14 grains in each fluidounce, the amount found agrees essentially with the claims.

ABSURD CLAIMS

It should be unnecessary, after pointing out the conflict between the name and the published formula, between the formula and the actual composition, and between the composition and all established therapy, to discuss this heterogeneous and unscientific mixture further. A few specimen absurdities, however may be quoted from the advertising "literature:"

". . . Free of the Disagreeable Effects of the Alkaline Iodides."

[Tri-Iodides, according to the laboratory report, depends for its iodin action on potassium iodid.]

". . . we have an assimilable form of vegetable hydriodates.
"The hydriodates of these valuable vegetable alkaloids afford the specific alterative action of iodine without such disagreeable results as the iodism produced by the ordinary iodides."

["The hydriodates" is an obsolete term formerly applied to iodids of vegetable alkaloids. Iodids of vegetable alkaloids, if present at all in Tri-Iodides, are present in negligible amounts.]

"Containing Iodine in an available form, it is obvious that the formula must be beneficial in the majority of syphilitic skin lesions."

The falsity of the first two of these claims and the mischievousness of the last are self-evident.

It would be possible, but is unnecessary, to produce an almost unlimited amount of evidence to show the transparent character of the deception by which this preparation is exploited.

The referee feels that the nostrum will have been sufficiently characterized when he has mentioned further that the name "Henry's Tri-Iodides" is blown in the glass of the bottle, that the label contains the recommendation "For Gout, Rheumatism and other Diathetic Diseases," and that the circular accompanying the bottle recommends the use not only of Tri-Iodides, but also of Three Chlorides, Maizo-Lithium, Campho-Phenique and Satyria in the treatment of many diseases.

Three Chlorides (Henry)

Three Chlorides (Henry) is advertised as:

"An oxygen-carrying ferruginous preparation, suitable for prolonged treatment of children, adults and the aged. Indicated in anemia and convalescence from acute diseases and surgical operations."

The following report on the composition of Three Chlorides is submitted by the Association's Chemical Laboratory:

LABORATORY REPORT

It is claimed that each fluidram of Henry's Three Chlorides contains:

"Mercuric Bichlorid	1-72 Gr.
"Arsenic Chloride	1-40 Gr.
"Proto-Chloride Iron	2-25 Gr.

". . . in a cordial of Calisaya Alkaloids."

The preparation is a pale yellow, clear solution having an odor of alcohol. The addition of potassium ferricyanid solution does not produce any blue coloration, thus demonstrating the absence of ferrous chlorid (iron protochlorid). Instead potassium ferrocyanid solution produces at once an intense blue precipitate and potassium sulphocyanate solution an intense red coloration, thus proving the presence of iron in the ferric condition. It is obvious that the claimed superiority of Three Chlorides over preparations containing ferric iron is absurd. Since it contains iron in the ferric condition, Three Chlorides decomposes soluble iodids with the liberation of free iodin. The assertion that it is a suitable "vehicle" for the administration of iodids is likely to lead the physician unwittingly to administer free iodin.

As the laboratory report shows, the "formula" of Three Chlorides (Henry) is incorrect for proto-chlorid of iron (ferrous chlorid) was absent from the preparation. There is, however, a more serious objection to the formula than the misstatement of fact. When the physician is dealing with conditions that call for mercury, arsenic or iron, it is irrational and unscientific to prescribe a preparation containing these three drugs in fixed proportions.

OBJECTIONABLE ADVERTISING

Three Chlorides is marketed in bottles having the name "Three Chlorides" blown in the glass, in a carton containing a circular extolling the curative powers of this and other proprietaries of the same concern. Thus a physician who prescribes Three Chlorides is likely to place in the hands of his patient the advice that

"Three Chlorides . . . is suitable for the prolonged treatment of children . . ."
"In tertiary syphilis, with or without potassium iodide, it holds first rank among remedies directed against the specific taint . . ."

Further, that "Maizo-Lithium" is:

"A Genito-Urinary Sedative" and a "remarkable uric-acid solvent."

Also that "Satyria" is:

"An Ideal Genito Tonic and Nerve Reconstituent."
"Indicated in Prostatic trouble, Cystitis, Urethritis, Gonorrhea, Gleet, Leucorrhea, Sexual Debility and Impotence."

We are told that

"As a hematinic, the protochloride of iron justifies the confidence of the medical profession."
"The protochloride, more than any other salt of iron, stimulates the paptic [*sic*] and hydrochloric glandular system of the stomach, increasing the flow of acid gastric juice."

It is unnecessary to discuss the truth or falsity of these assertions, since Three Chlorides does not contain the protochlorid of iron. For the same reason, it is obvious that the small amount of iron which it contains is the only possible justification for the claim that the preparation is

". . . Non-Productive of . . . Constipation or Teeth Discoloration."

It is hardly necessary to point out that it is a therapeutic exaggeration to claim that Three Chlorides is of particular value in the treatment of tertiary syphilis, that in eczema it is "the most effective remedy," that in any form of constipation it is "the remedy par excellence," or that

"After arresting malarial attacks with quinine, the combination of iron, arsenic and mercury with calisaya is an essential requisite."
"Whenever gastric troubles and digestive disturbances furnish a contra-indication to iron, this contra-indication disappears when the iron is combined with arsenic."
"The simultaneous exhibition of small doses of arsenic and bichloride of mercury, besides augmenting the effect of iron upon the red blood-cells, completely obviates the tendency to vascular congestion and hemorrhage."

Finally, the suggestion that by the use of Three Chlorides iodids may be prevented from causing iodism is absurd.

In short, whatever may be the advisability of prescribing iron, arsenic or mercury in any given case, it is irrational to prescribe them in fixed proportions. A physician who is induced by the exaggerated advertising claims to prescribe these drugs in a proprietary mixture, under a non-informative name, does grave injustice to his patients.

Maizo-Lithium

Maizo-Lithium (Henry Pharmacal Co., St. Louis) is one of the many proprietary lithium preparations based on the disproved theory that lithium dissolves uric acid deposits in the body. The label on a trade package states that:

"Maizo-Lithium promptly facilitates the elimination of the uric and phosphatic deposits from the system."

As might be expected, the promoter of Maizo-Lithium ascribes a long list of ills to "uric and phosphatic deposits," and argues that, therefore, Maizo-Lithium is the proper treatment:

"In lithemia, hematuria, incipient diabetes, cystitis, urethritis, pyelitis and ALL inflamed conditions requiring a non-irritating diuretic."

"Inflamed conditions" naturally, include almost all of the real or imaginary ills of kidney, bladder, etc.

Maizo-Lithium is distinguished from its congeners chiefly by the claim that it contains a mythical or problematical compound, maizenate of lithium.

LABORATORY REPORT

The following report on the composition of Maizo-Lithium has been submitted by the Chemical Laboratory of the American Medical Association:

The promoter of Maizo-Lithium makes the following statement upon the label concerning the composition of the preparation:

"Each fluid drachm contains two grains maizenate of lithium."

The following is also found in a circular which is enclosed with the trade package of Maizo-Lithium:

"Maizo-Lithium, the remarkable uric acid solvent, is a nascent chemic union of maizenic acid, obtained from green corn silk, with the alkaline base lithium forming maizenate lithium, of which the mother liquid carries two grains to each drachm."

Standard works on organic chemistry and pharmacology, such as Beilstein's Organische Chemie and Cushny's Pharmacology and Therapeutics, do not mention maizenic acid. Neither is it mentioned in comprehensive bibliographies of phyto-chemical investigations such as Huseman-Hilger's Die Pflanzenstoffe or Wehmer's Die Pflanzenstoffe. The first to use the term appears to have been a Dr. Vautier (*Arch. méd. belg.*), but his publication is not available to the laboratory. Rademacher and Fischer (*Amer. Jour. Pharm.*, 1886, lviii, 369) claim to have isolated the substance from green corn-silk, but the record of their work is unsatisfactory and indefinite and therefore their results could not be verified; it seems unlikely, however, that they isolated a pure proximate principle.

Examination of Maizo-Lithium demonstrated the absence of bromids, chlorids, phosphates, sulphates, acetates, benzoates, salicylates and tartrates—combinations in which lithium might be expected to be present. The presence of a citrate, however, was shown by the usual tests. Lithium and sodium were present. Free acid was absent. Determination of lithium citrate and of sodium citrate indicated the presence of a total of about 3.7 gm. of these two salts in each 100 c.c. of the preparation, or about 2.1 grains in each fluidram. About 25 per cent. of the total salts appeared to be lithium citrate. The examination, therefore, does not demonstrate the presence of "maizenate of lithium," but does show that Maizo-Lithium contains a mixture of lithium citrate and sodium citrate. Tests for citric acid and citrates were made on a commercial specimen of fluidextract of corn-silk. The results were negative, although the preparation had an acid reaction to litmus. The presence of maizenate of lithium in Maizo-Lithium—in fact, its actual existence—thus failed of demonstration. In view of this fact, it was felt that the burden of proof rested on the promoter of Maizo-Lithium to supply some satisfactory evidence with regard to this substance. The following letter was, therefore, sent to James F. Ballard:

"According to the label on a recently purchased bottle of Maizo-Lithium, each fluidram of this preparation contains 2 grains of 'maizenate of lithium.' From an examination made in this laboratory we are inclined to conclude that this statement is not in accordance with the facts. A search of chemical and pharmaceutical publications does not reveal that such a compound as 'maizenate of lithium' has ever been isolated and described and we are very much inclined to question its existence. We should be pleased to receive from you any evidence which you may care to send in substantiation of your claim in regard to the content of 'maizenate of lithium' in Maizo-Lithium—particularly a specimen of 'maizenate of lithium' or the method by which it is produced."

While this letter was sent Oct. 13, 1914, no evidence has been submitted up to date (January, 1915) to substantiate the asserted presence of maizenate of lithium in Maizo-Lithium.

The report just given shows that the manufacturer has found it expedient to surround his worthless nostrum with a cloak of mystery. A discussion of the jumble of uncritical claims, baseless assertions and evident falsehoods presented in favor of Maizo-Lithium would seem a waste of time when the secrecy of this nostrum is all-sufficient for its condemnation.

[EDITORIAL NOTE.—When the Council on Pharmacy and Chemistry was started we announced that we did not see any clear line of demarcation between "patent medicines" and many so-called "ethical proprietaries." Time has not caused us to change our opinion. As we have already shown, and as we shall have occasion to show in the future, not a few of the "ethical proprietaries" offered to physicians are being advertised by those who are pushing the rankest of "patent medicines." The three preparations mentioned above are sold—and presumably manufactured—by Mr. Ballard, of St. Louis. Mr. Ballard is the promoter of Ballard's Snow Liniment, Brown's Iron Bitters, Herbine, Dr. Herrick's Vegetable Liver Pills, Swaim's Panacea, Renne's Pain Killing Oil, etc. He is also the promoter of Campho-Phenique, exposed in THE JOURNAL some eight years ago.[1] The spectacle is not an edifying one. A manufacturer with one hand offers the public a profusion of cure-alls, while with the other he endeavors to foist on the medical profession preparations which are just as fraudulent. Some day our profession will awake to the disgrace of it all. It will also awake to the fact, which should have been evident ere this, that the nostrum business would cease if physicians would refuse to accept into their offices, even as a gift, the nostrum-promoting medical journals that live off this trade. Fraudulent "patent medicines" will continue to thrive just so long as newspapers will publish "patent medicine" advertisements; fraudulent "ethical proprietaries" will continue to exist just so long as medical journals will advertise such proprietaries. As the better class of newspapers are rejecting "patent medicine" advertising on their own volition, so are the better class of medical journals rejecting advertisements of fraudulent proprietaries. Some newspapers will continue to carry nostrum advertising until their subscribers raise a protest that will cause the business department to take notice; so, too, some medical journals will continue to share the profits with the nostrum exploiters until an outraged medical profession repudiates such publications.]

1. THE JOURNAL A. M. A., April 20, 1907, reprinted in "Propaganda for Reform," 8th Edition.

Milk Sugar and Charcoal in a Case of Mercurial Poisoning.—A young woman with chronic nephritis took mercuric chlorid with suicidal intent, but recovered. The treatment was with 100 gm. of lactose a day, supplemented by vegetable charcoal, which was given by the tablespoonful every two hours and by an enema twice a day. No food was allowed but milk, and water was given freely. The tendency to anuria was transiently relieved by wet-cupping, but when the anuria became complete, A. Lamas, who reports the case in *Medicina Contemporanea*, 1914, xxxii, 406, made an intravenous injection of 700 c.c. of a 25 per cent. solution of sugar. He injected the whole amount in fifteen minutes, regarding haste as a factor in the result. Urine was voided at once and repeatedly during the following hour, to a total of 1.1 liter.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DOAN'S KIDNEY PILLS AND SOME SHOTGUN PRESCRIPTIONS

To the Editor:—1. Please state the formula of Doan's Kidney Pills. 2. Please comment on the following prescriptions:

STOMACH AND NERVE TONIC TABLETS

℞ Carica papaya (papain)	1	gr.
Strychnin phosphate	1/64	gr.
Willow charcoal	2	gr.
Ext. eucalyptus	¼	gr.
Ext. hydrastis	⅛	gr.
Celery seed	¼	gr.
Ipecac po	⅛	gr.

Sig.: For an adult, 1 or 2 tablets before or after meals as directed.

LIVER AND BOWEL REGULATORS

℞ Ext. chionanthus	½	gr.
Podophyllin	½	gr.
Po. ipecac	¼	gr.
Cascarin	¼	gr.
Aloin	⅛	gr.
Ext. hyoscyamus	⅛	gr.
Ext. nux vomica	⅛	gr.

Sig.: For an adult, 1 or 2 on retiring as directed.

J. H. LOWE, M.D., Mentor, Ohio.

ANSWER.—1. According to "Secret Remedies" (first edition), published by the British Medical Association, analysis of Doan's Backache Kidney Pills "showed them to contain oil of juniper and (in spite of their 'purely vegetable' nature) potassium nitrate, together with a considerable proportion of a resinous substance, and of powdered fenugreek seeds and wheat and maize starches." According to the same authority, the following formula gave a similar pill:

Oil of juniper	1 drop
Hemlock pitch	10 gr.
Potassium nitrate	5 gr.
Powdered fenugreek	17 gr.
Wheat flour	4 gr.
Corn starch	2 gr.

In twenty pills.

In "Nostrums and Quackery" (second edition) a comparison is made of the British and American labels of Doan's Pills. Attention also is directed to one of the Doan's Kidney Pills' newspaper advertisements of the testimonial type. It is shown that the individual whose name appeared in the testimonial died of nephritis two months before the testimonial was published! An article reprinted in the "Propaganda for Reform Department" of THE JOURNAL, Nov. 7, 1914, gives the reply of a weekly magazine to the arguments made by the representative of the Doan's Kidney Pills concern.

2. The most striking characteristic of the prescriptions given is their polypharmacy, the collection of a large number of ingredients in one pill. Some of these may be adapted to a certain condition, but it is quite doubtful if a condition can be found in which all of them would be of service. The question of chemical incompatibility does not apply in such a mixture, so that we are chiefly concerned with the therapeutic value of the ingredients. Papain, obtained from carica papaya (papain), is a vegetable product having some of the properties of pepsin, but of a very uncertain and feeble digestive power. Willow charcoal is a remedy often prescribed on the theory that it will absorb a large quantity of gas from the stomach. This assumption is not well founded, as the charcoal, when wet, has a very slight power of absorbing gases. Extract of eucalyptus is given as an antiseptic, but the value of antiseptics in the stomach is very problematic. In the first place, in most conditions, there is no fermentation in the stomach. The gas which is found in many cases is not the result of fermentation, but consists of swallowed air. Second, antiseptics can seldom be given in sufficient doses to arrest fermentation in the stomach when it actually occurs, as in cases of stasis. In these cases the only efficient remedy is to restore the motor power of the stomach so that it can empty itself.

Extract of hydrastis is a remedy which was formerly recommended for a supposed effect on the mucous membranes. Excepting the possible value of hydrastis as a bitter, there is little reason to believe that it is of any service in gastro-intestinal diseases. To secure its effect as a bitter, if it has any, it is necessary to give it in solution. Given as here, in the form of a pill or tablet, it is worthless.

Celery seed is a substance reputed to have value as a nerve tonic. The action of this substance is practically unknown. If it has any value it must be very small. We are unable to suggest the condition for which the powdered ipecac of this prescription is intended.

In the second prescription, like the first, the number of ingredients is excessive. Chemical incompatibilities may be disregarded, as the preparation is in the form of tablets or pills. Of the ingredients, the extract of chionanthus is a little used medicine of very indefinite properties, believed to be an alterative, a convenient but indefinite term, and also believed to have what is equally indefinite, a favorable effect on the liver. The other ingredients of this pill may be said to be synergistic, given for their effect on the intestines, especially for the relief of constipation. It may be said that this pill compares favorably with some of the venerable combinations, such as the compound cathartic pill and other polypharmacal combinations of the Pharmacopeia.

With reference to the first prescription, it is difficult to say what purpose it is intended for, and it would be equally difficult for the physician who should administer it, to determine which of its ingredients was the effective agent.

MARRIAGE OF THE TUBERCULOUS

To the Editor:—I should like to inquire as to the chances of the development of tuberculosis in patients, especially women, who have been discharged as "cured" after a course of sanatorium treatment and who afterward marry. By cured I mean patients that have been free from moisture for some time and who only show a certain amount of dulness and increased vocal fremitus over the site of the old lesion. Would you ever consider marriage advisable in such cases and would the occurrence of pregnancy mean very great risk in lighting up an old focus? I am compelled to deal with these things and would like an opinion on them. If this is published, kindly do not mention my name.

C. C. M.

ANSWER.—Patients who have recovered to the extent indicated by the correspondent should be advised that they take a considerable risk in marrying. In general it is not held that women strongly predisposed to tuberculosis should marry. The actual risk of marriage without pregnancy is not very great. If pregnancy occurs, there is danger of the lighting up of an old focus. Some authors, however, report experiences with pregnancy in tuberculosis which indicate no very great influence of the tuberculosis on the pregnancy, or vice versa. These, however, should be regarded as exceptional.

THE TEACHING OF REFRACTION BY CORRESPONDENCE

To the Editor:—I wish to take a course in refraction, and am unable to get away from my practice to do so. Is there not an institution where this is competently taught by correspondence? It seems to me I have seen such an advertisement somewhere, and I am writing to inquire if you can advise me of the address, if there is such a place.

H. L. G.

ANSWER.—The theoretical studies that underlie practical refraction work, such as physiologic optics, can be carried on by correspondence, and a knowledge of the elements of refraction can be acquired from books, just as one may, in theory, study other kinds of physical diagnosis. The practical application of these elements cannot, however, be learned except in a properly equipped "refraction room" with living patients and under the supervision of an expert. Effective refraction work involves the intelligent use of the skiascope, ophthalmoscope, phorometer, ophthalmometer, trial case and other devices that cannot be taught by mail, any more than can the use of the stethoscope or the laryngoscope. Prescribing for asthenopic and ametropic patients (apart from jewelry-store efforts) is not that simple procedure one is sometimes led to believe, while six months or a year in a hospital or a medical school is none too long a period to study this important form of therapeutics.

DOSAGE OF EMETIN IN PYORRHEA

To the Editor:—Will you kindly state the dosage and intervals between injections in the emetin treatment of pyorrhea alveolaris?

E. J. S.

ANSWER.—Emetin hydrochlorid is given in pyorrhea alveolaris in doses of from ½ grain to 1 grain at intervals of from one to two days. It is claimed that from three to six doses are necessary, and in some cases it may be necessary to repeat this course at the end of ten days.

Miscellany

Requirements of the Harrison Law

As previously stated,[1] the Harrison bill, which has been before Congress for the last two years, became a law, Dec. 17, 1914. Official copies of the law and the regulations for its enforcement have been issued by the Commissioner of Internal Revenue. While the provisions of the bill were discussed at length during its consideration in Congress, so many modifications took place that a general summary of the law as finally enacted seems advisable.

THE SECTIONS

Section 1 provides that on and after the first day of March, 1915, every person who produces, imports, manufactures, compounds, deals in, dispenses, sells, distributes or gives away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof shall register, with the collector of internal revenue of the district, his name and place of business, the office of a physician, or residence in the absence of an office, being considered the place of business. At the time of registration and on the first day of July annually thereafter, each person who performs any of the acts covered by the bill must pay to the district collector of internal revenue a special tax of one dollar per annum. Officers of the United States government lawfully engaged in purchasing such drugs, or officers of any state, county or municipality purchasing drugs for public hospitals, are exempt.

Section 2 provides that it shall be unlawful for any person to sell, barter, exchange or give away any of the specified drugs except in pursuance of a written order from the person to whom the drugs are sold or given, which order must be on a form issued in blank by the Commissioner of Internal Revenue. These orders must be made out in duplicate, one copy to be written by the person ordering the drugs and the other by the person filling the order, and both copies must be accessible to the revenue officer for a period of two years. The following acts are exempt: The dispensing or distribution of any of these drugs to a patient by a physician, dentist or veterinary surgeon, registered under this act, in the course of his professional practice only, provided the person dispensing shall keep a record of all such drugs for a period of two years. The filling of a prescription written by a physician, dentist or veterinary surgeon, registered under the act, is also exempt. Such prescriptions must be dated and signed by the physician and must be preserved by the druggist for a period of two years. The various forms and blanks required shall be furnished by the Commissioner of Internal Revenue at a price not to exceed one dollar per hundred.

Section 3 provides that any registered person shall on request of the collector of the district render a sworn statement of the quantity of the prescribed drugs received by him during the past three months and the names of the persons from whom they were received.

Section 4 forbids interstate commerce in these drugs, except by a registered person, common carriers being exempt.

Section 5 provides that all records shall be open to the inspection of the officers of the Treasury Department or officers of any state or territory or municipality charged with regulating the traffic in the specified drugs. Certified copies of returns can be secured from the collector of internal revenue by state or municipal officers. The disclosing of information except for the enforcement of the act is forbidden.

Section 6 provides that the act shall not apply to the sale, distribution, giving away, dispensing or possession of preparations which do not contain more than 2 grains of opium or more than ¼ grain of morphin or more than ⅛ grain of heroin or more than 1 grain of codein or any salt or derivative of them in 1 fluidounce, or if a solid or semisolid preparation, in 1 avoirdupois ounce, or to liniments, ointments or other preparations prepared for external use only, except those which contain cocain or any of its salts or alpha or beta eucain. Decocainized coca leaves or other preparations of coca leaves which do not contain cocain are also exempt.

Section 7 provides for the extension of all internal revenue laws so as to make them applicable to this act.

Section 8 provides that no person not registered under the provisions of this act shall have in his possession or under his control any of the specified drugs, such possession or control to be presumptive evidence of the violation of this act. Employees of registered persons, nurses under the supervision of physicians, dentists or veterinary surgeons registered under this act or the possession of drugs in accordance with a prescription of a physician registered under the act are exempt.

Section 9 provides a penalty of a maximum fine of $2,000, imprisonment of not more than five years or both for violations of the law. Section 10 authorizes the Commissioner of Internal Revenue to appoint necessary persons to enforce the law. Section 11 appropriates $150,000 for carrying it out, and Sections 12 provides that this act shall not amend or repeal the previous laws on this subject.

THE REGULATIONS

The regulations are somewhat more illuminating, as they form the application of the law to specific conditions. The registration fee for the period remaining from March 1, 1915, to July 1, 1915, is prorated at 34 cents, remittance to be made in currency, money order or certified check. Application for registration blanks should be made to the collector of the district. Each application will be given a registry number which will be permanent and which will be entered on all blank orders issued to the applicant. All applications will be recorded alphabetically by classes, and coupon stamps to the amount of the special tax required will be furnished by the collector. Orders for any of the specified drugs must be made on the prescribed form, supplied by the collector of internal revenue bearing the registry number and signature of the person ordering the drugs. All orders must be in duplicate, the duplicate retained by the maker and the original by the person filling the order, and both copies must be kept on file for two years in such a way as to be readily accessible to the inspecting officers. A written order is not required for the dispensing or distribution of any of the specified drugs to a patient by a physician registered under this act in the course of his professional practice, but a record of drugs so dispensed must be kept by each physician in a suitable blank book to be provided by the physician, the records showing the date, the kind and quantity of drugs dispended and name and residence of the patient to whom the drugs were given. Prescriptions must be dated and signed on the day issued, and must contain the name of the physician and the name of the person for whom the prescription is filled. Druggists are required to file such prescriptions separately or else to keep a separate record of such prescriptions, showing the file number in each case. In addition to the signature of the physician, the prescription must state the registry number, the location of the office of the physician and the name and address of the person for whom such prescriptions are written. Druggists are required to refuse to fill prescriptions that are not so signed, or any prescriptions that they have reason to suspect were fraudulently issued. The dispensing of such drugs by druggists, except in accordance with the physician's original prescription, is forbidden. Refilling of prescriptions containing habit-forming drugs is therefore prohibited under this law. Each person dispensing these drugs directly to consumers is required on the first day of March, 1915, to prepare and keep on file an inventory of all such drugs on hand at that time.

Copies of the law, and the regulations with an appendix giving the collection districts and the address of the collectors of internal revenue for each district, can be obtained from the Commissioner of Internal Revenue at Washington or from the collectors of the various districts. The pamphlet is Internal Revenue Regulations, No. 35, dated Jan. 15, 1915.

1. Congress Passes Antinarcotic Bill, Current Comment, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2234. Harrison Bill Becomes a Law, Miscellany, Dec. 26, 1914, p. 2306.

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Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

KANSAS: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lehanon.

MAINE: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

MASSACHUSETTS: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

California July Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at San Francisco, July 14-17, 1914. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 56, including 7 osteopaths, of whom 33 passed, including 1 osteopath and 1 drugless practitioner; 23 failed, including 6 osteopaths. Sixty-seven candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Medical Evangelists	(1914)	88.8
College of Phys. and Surgs., San Francisco	(1914)	77
Hahnemann Medical College of the Pacific (1913) 80.8;	(1914)	78
Leland Stanford Junior University (1914) 76.3, 82.1, 82.7, 84.7, 85.4, 86.1, 90.1.		
University of California (1914) 86.5, 87.9, 88.2, 88.5, 88.7, 88.7, 90.1.		
University of Colorado	(1914)	81.5
Chicago College of Med. and Surg	(1914)	81.9
Johns Hopkins University	(1913)	81.4
Harvard University	(1912) 82.9; (1914)	82.1
College of Phys. and Surgs. in the City of N. Y.	(1902)	75.4
Columbia University	(1913)	75.9
Cornell University	(1910)	83.8
University and Bellevue Hospital Medical College	(1913)	83.4
University of Oregon	(1914)	85.8
Medico-Chirurgical College of Philadelphia	(1914)	88.5
University College of Medicine, Richmond	(1899)	93
Royal College of Physicians and Surgeons, Ireland	(1908)	75.5

FAILED

College		
California Eclectic Medical College	(1913) 64; (1914)	70.3
College of Medical Evangelists	(1914)	72.4
College of Phys. and Surgs., Los Angeles (1914) 69.5, 70.1, 73.5.		
College of Phys. and Surgs., San Francisco	(1914)	68.7
Cooper Medical College	(1903) 60; (1907)	65.9
Hahnemann Medical College of the Pacific	(1913) 63.3,	73.1
Leland Stanford Junior University	(1914)	73.1
Denver and Gross College of Medicine	(1908)	67.3
Medical College of Indiana	(1902)	69.7
Kentucky School of Medicine	(1906) 68.8; (1907)	48.3
Barnes Medical College	(1911)	73.8

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Phys. and Surgs., San Francisco	(1907)	Washington
University of Colorado	(1912)	Colorado
Georgetown University	(1908)	Dist. Colum.
American Med. Missionary Coll., Chicago (1899) Illinois; (1903) Wisconsin.		
Chicago College of Med. and Surg. (1907) Nebraska; (1912) (1913) Illinois.		
Chicago Homeopathic Medical College	(1900)	Illinois
Hahnem. Med. Coll. & Hosp., Chicago (1903) Iowa;	(1910)	Illinois
Hering Medical College	(1904)	Illinois
Northwestern University	(1909) (1911)	Illinois
Rush Medical College (1884) Minnesota; (1900) (1910) (1913) Illinois; (1910) Arizona.		
University of Illinois	(1911)	Illinois
Central College of Physicians and Surgeons	(1894)	Indiana
Indiana University	(1910)	Indiana
Medical College of Indiana	(1889) Indiana; (1902)	Utah
State University of Iowa, Coll. of Med.	(1910) (1912)	Iowa
Kentucky School of Medicine	(1897)	Washington
Louisville and Hospital Med. Coll.	(1908)	Illinois
Louisville Medical College	(1879)	Nebraska
Tulane University of Louisiana	(1910)	Louisiana
Medical School of Maine	(1896) Maine; (1911)	New York
Baltimore Medical College	(1904) Illinois; (1905)	R. Island
Johns Hopkins University	(1908)	Penna.
Maryland Medical College	(1911)	Virginia
University of Maryland	(1883) Colorado; (1892)	Penna.
Harvard University	(1910)	Maryland
Detroit College of Medicine	(1903)	Michigan
Barnes Medical College	(1910)	Missouri
Homeopathic Medical College of Missouri	(1907)	Missouri
Kansas City Homeopathic Medical College	(1894)	Kansas
Marion-Sims College of Medicine	(1897)	Wisconsin
St. Louis University	(1913)	Missouri
University Medical College, Kansas City	(1900)	Idaho
University of Missouri	(1875) Colorado; (1909)	Missouri
Washington University	(1911)	Missouri
John A. Creighton Medical College	(1901) Iowa; (1904)	Nebraska
Albany Medical College	(1875)	New York
Bellevue Hospital Medical College	(1887)	Tennessee
College of Phys. and Surgs. in the City of N. Y.	(1872)	New York
New York Homeo. Medical Coll. and Flower Hosp.	(1904)	New York
Cleveland Medical College, Homeopathic	(1892)	Ohio
Eclectic Medical College, Cincinnati (1904) Arkansas;	(1913)	Ohio
Medical College of Ohio	(1905)	Ohio
Jefferson Medical College	(1891)	Penna.
University of Pennsylvania	(1910) Virginia; (1911)	New York
Meharry Medical College	(1912)	Tennessee
University of Tennessee	(1891)	Kansas
McGill University	(1898)	N. Dakota
University of Leipzig	(1892)	New York
Royal University of Naples, Italy	(1903)	Nevada

South Dakota July Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Deadwood, July 14-16, 1914. The total number of subjects examined in was 15; total number of questions asked, 115; percentage required to pass, 75. The total number of candidates examined was 20, of whom 18 passed and 2 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1912) 94.7; (1913)	79
Chicago College of Med. and Surg	(1913)	77.5
College of Phys. and Surgs., Chicago (1910) 83; (1912) 86.1, 87.7,		90.8
Northwestern University	(1911)	88.8
Rush Medical College	(1910) 86.1; (1912) 89.9; (1913)	87.8
Medical College of Indiana	(1902)	75.5
University of Michigan, Dept. of Med. and Surg. (1906) 86.2; (1910) 89.1; (1912) 92.8; (1914) 90.5.		
St. Louis University	(1904)	83.3
McGill University, Toronto	(1896)	83.4

FAILED

College		
Atlanta College of Phys. and Surgs	(1909)	56.5
American College of Med. and Surg	(1906)	71.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Kentucky University	(1904)	Kansas
University of Minnesota	(1901)	Minnesota

Massachusetts July Report

Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, July 14-16, 1914. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 165, of whom 117 passed, including 15 non-graduates and 5 osteopaths, and 48 failed, including 19 non-graduates, 10 osteopaths and 1 chiropractic. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1913) 80.5; (1914)	79.6
Chicago College of Medicine and Surgery (1912) 75; (1913) 75; (1914) 79, 79.1.		
State Univ. of Iowa, Coll. of Homeo. Med.	(1912) 77.9; (1913)	79.7
Medical School of Maine	(1914)	75
Eastern University School of Medicine*	(1913)	76.1
Johns Hopkins University	(1914)	80.5
Maryland Medical College	(1913) 75,	75
University of Maryland	(1914) 75.2,	82
Boston University (1913) 77.5; (1914) 75, 75.9, 76.5, 77.1, 77.2, 77.2, 78.5, 79, 80.8, 81, 81.7, 81.7, 82.2.		
College of Physicians and Surgeons, Boston	(1912)	75
Harvard University (1890) 80; (1912) 80; (1914) 76.1, 76.4, 77.2, 77.7, 77.7, 78.5, 80, 80.2, 81.5, 82.1, 82.2, 82.7, 82.8.		
Tufts College Medical School (1911) 75; (1912) 75.4, 79.7; (1913) 75, 75.8, 79, 79.3, 81.5, 81.8; (1914) 75, 75, 75, 75, 75.3, 75.8, 76,		

76.2, 76.5, 76.5, 76.7, 77, 77.5, 77.5, 78, 78.1, 78.2, 78.2, 78.2, 78.2, 78.5, 78.6, 78.7, 78.9, 79.2, 79.3, 79.4, 79.7, 80.4, 80.8, 81.7.

Albany Medical College.....(1913) 78.5, 79.3
University of Michigan, Dept. of Med. and Surg.....(1901) 75.8
Jefferson Medical College.....(1914) 75.1, 80
Medico-Chirurgical College of Philadelphia.....(1914) 75
Temple University .....(1914) 82.2
University of Vermont .....(1912) 79.9; (1914) 78
Dalhousie University .....(1914) 75.9
Royal University of Naples.....(1911) 75
Royal University of Rome .....(1905) 79.5
Non-graduates 75, 75, 75, 75, 75.5, 75.5, 75.5, 75.7, 75.7, 76.8, 76.8, 77, 77.5, 78, 78.5.

FAILED

College of Physicians and Surgeons, San Francisco..(1913) 67.5†
University of Louisville .....(1912) 68.7, 72.6
College of Physicians and Surgeons, Baltimore.....(1914) 63‡
Maryland Medical College.....(1912) 60.5; (1913) 58.1, 66
College of Physicians and Surgeons, Boston (1908) 62.5; (1910) 64.7; (1911) 65.2; (1913) 63.4, 69.1, 72.4.
Tufts College Medical School .....(1913) 71.7; (1914) 66.4
University and Bellevue Hospital Medical College....(1913) 72.8
Medico-Chirurgical College of Philadelphia.....(1914) 71.2
National University of Athens .....(1898) 46.2
Non-graduates, 36.2, 36.9, 47.5, 51.9, 55.2, 61.9, 62, 64, 65.7, 66, 67, 68.5, 69, 70.2, 70.2, 71.8, 72, 72.1, 72.2.

* Officially reported as not recognized by the Maryland State Board of Medical Examiners.

† Official information from the college states this candidate is not a graduate.

‡ Examination not completed.

Book Notices

THE NERVOUS SYSTEM AND ITS CONSERVATION. By Pefce Goldthwait Stiles, Instructor in Physiology in Harvard University. Cloth. Price, $1.25 net. Pp. 229, with illustrations. Philadelphia: W. B. Saunders Company, 1914.

This book consists of twenty-three brief chapters, as follows: Introduction. The minute structure of the nervous tissues. The elements of nerve physiology. Reflexes. The general anatomy of the nervous system. The afferent part of the nervous system. The neuromuscular mechanism. The neuromuscular system: neuromuscular fatigue. The autonomic nervous system. The cerebrum. The cerebrum and human development. The cerebrum and the life of the individual. Emotion. Sleep. Dreams. Causes of nervous impairment. Neurasthenia. Some matters of general hygiene. The author states that "if this volume is not to be an impertinence it must be justified by the attempt made to combine some elements of the anatomy, physiology and hygiene of the nervous system." He has succeeded in giving a clear and interesting account of the main facts and principles involved, and while in his modesty he does not address himself to the medical profession, we can assure our colleagues that unless they have kept unusually well abreast of the advances in the physiology of the nervous system, they may spend a few profitable and pleasant hours with this little book and then turn it over to educated lay friends who wish a readable account of the workings of the nervous system and the principles which govern our efforts at maintaining its efficiency.

ABDOMINAL SURGERY. Clinical Lectures for Students and Physicians. By Thorkild Rovsing, Professor of Clinical Surgery at the University of Copenhagen. Edited by Paul Monroe Pilcher, A.M., M.D. Cloth. Price, $5. Pp. 477, with 136 illustrations. Philadelphia: J. B. Lippincott Company, 1914.

The title of this work is broader than the subject matter. Of the twenty-five chapters, five are on general subjects, such as the history of antiseptics and on the use of anesthetics, general and local, etc., seventeen are on surgery of the stomach, and the remaining three on echinococcus and abscess of the liver, and chronic jaundice. Each chapter is a clinical lecture, and the author says, "The clinical lecture unquestionably offers certain advantages and affords a point of view which cannot be found in the systematic compact text-book." It is true that the clinical lecture and demonstration offer great advantages, but these advantages rest largely in the demonstration, that is, in what one sees done, and the manner of doing it. All this is lost when the clinical lecture is put into print. In the clinic, what is said is exemplified by what is done; but when the clinical lecture is put into print minus the objective part, it has usually lost most of its value, as one seldom talks in the clinic in the concise manner in which one writes. Under the subject of "Local Anesthesia," the author says, "Amputations and resections cannot therefore be performed with this method, but even if they could be they should in my opinion never be done under local anesthesia, but under ether narcosis, because it is really inhuman to allow a fully conscious patient to undergo such dangerous and physically overwhelming operations when we are in possession of such a safe general anesthetic." He condemns Bier's method of local anesthesia, because "in the first place it is quite superfluous and as I said before inhuman, and secondly because one can safely foretell that it will prove very dangerous." From these statements it is very evident that the author has had little experience with modern local anesthesia, as none of the direful things which he predicts about it have come true; on the contrary, its use is rapidly gaining ground. Spinal anesthesia, on account of its high mortality, is justly discarded. The author's method of treating gastroptosis is specially interesting and the rather high percentage, namely, from 71 to 75 per cent., of complete relief from all symptoms after operation is encouraging, considering the complicated nature of the lesions found in these cases. The author's experience in gastric surgery has been quite large, and his lectures on this subject contain many valuable suggestions.

ACUTE GENERAL MILIARY TUBERCULOSIS. By Prof. Dr. G. Cornet. Translated by F. S. Tinker, B.A., M.B., B.C. Cloth. Price, $1.50 net. Pp. 103. New York: Paul B. Hoeber, 1914.

This monograph is devoted chiefly to the etiology and pathology of acute miliary tuberculosis. The etiology is chiefly concerned with the way in which tubercle bacilli can reach the blood from lesions already existing in the body. This may occur in three principal ways: by the transmission of a large number of bacilli from the thoracic duct into the veins, by rupture of a cheesy tuberculous gland or other collection into a blood vessel, or by the gradual invasion of several of the smaller blood vessels by tuberculous lesions from which the bacilli escape into the blood stream. The symptoms are sketched with some detail, and a brief discussion of diagnosis and prognosis is given. Strange to say, notwithstanding the exact methods of determining the presence of bacilli in the blood, the correct diagnosis of this condition has not been made clinically in the majority of cases. The author quotes Silbergleit to the effect that "in almost all of thirty-one cases of acute miliary tuberculosis reported by Lubarsch, the diagnosis was not clinically proved and, as a rule, the suspicion of it was not found once expressed." Prophylaxis and treatment occupy scarcely two pages. The author suggests, however, that "as healing is not absolutely impossible, we must not put our hands in our pockets but must strive to attain our aim, even though this is rarely accomplished." It is the hope and possibility of attaining this aim that gives value to a discussion of this subject, which is unfortunately too little known.

THE EVOLUTION OF THE STUDY OF ANATOMY AND ITS IMPORTANT RELATION TO THE DEVELOPMENT OF SURGICAL KNOWLEDGE. By J. Ewing Mears, M.D., LL.D. Cloth. Price, 75 cents. Pp. 26, with 6 illustrations. Philadelphia: William J. Dornan, 1914.

This little book gives an interesting account of the development of the science of anatomy from the early Greeks to the present time. Investigators from the beginning have had to combat the antipathy of the people to the desecration of the human body. Later, when the need of such study was more universally recognized, the difficulty of obtaining sufficient material is dwelt on, with its consequent grave robbing and "burking," and the outburst of indignation against the anatomists incident thereto. With the present reasonable laws for supplying the needs of medical schools, and the question of preservation of available material quite satisfactorily solved, the author pleads for an exhaustive study of the whole subject as a basis for surgical practice in general, or in any specialized line. It is an interesting essary.

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Medicolegal

Practice of Medicine by Clairvoyants

(Commonwealth vs. Delon (Mass.), 106 N. E. R. 846)

The Supreme Judicial Court of Massachusetts overrules exceptions to a conviction of the defendant of practicing medicine in violation of Section 8 of Chapter 76 of the Revised Laws of Massachusetts. The court says that her defense was that what she did was done by her as a clairvoyant within the last clause of Section 9, which provides that the penalty of Section 8 shall not apply to a clairvoyant who violates none of the provisions of that section. Evidence was introduced that two men called on her for treatment; while asleep, holding the patient's hands, she gave advice to the first and told the second the nature of his sickness; and that in both cases she furnished the patients with medicine for which she was paid. The defendant took the stand in her own behalf and testified that she was not learned in diseases or in medicine; that when consulted by a patient she went into a trance and that while in the trance she was told by "occult force" what the matter with the patient was and what remedy to prescribe; that on coming out of the trance she prescribed what had been revealed to her while she was in it. The judge instructed the jury that if the defendant was a clairvoyant, in her line of practice, she was not within the exception specified in the statute if, for the cure, prevention or alleviation of any pain, disease or sickness of those seeking treatment from her, she prescribed or directed any drug or medicine, with the expectation of receiving compensation therefor. To this an exception was taken. Possibly the word "clairvoyant" might be interpreted to include one who hears communications made by "occult force" while in a trance. But in the accurate and indeed in the ordinary meaning of the word it is confined to a person who sees, while in a trance, things which by reason of distance or for other reasons are not ordinarily visible. The court is of the opinion that Section 9 above referred to, in creating exceptions to the general rule established by Section 8 of that act, is to be construed strictly. It follows that the word clairvoyant must be construed accurately. So construed, it does not authorize a defendant to prescribe medicines revealed to him by "occult force" while in a trance. The instruction given was right.

Roentgen-Ray Examination Required—Photographs of Body as Evidence

(Cincinnati, N. O. & T. P. Ry. Co. vs. Nolan (Ky.), 170 S. W. R. 650)

The Court of Appeals of Kentucky reverses a judgment recovered by plaintiff Nolan in this personal injury case, remanding the case for a new trial. The court says that he was a brakeman and was thrown to the ground by the giving way of a handhold at the top of a car. A little while after this he appeared at the station, apparently suffering great pain, and was taken to a hospital. The physicians in charge could find no evidence of a broken bone, but he declined to allow them to put him under an anesthetic. After staying at the hospital about a month, he was taken home, and later brought this suit against the company, charging, in substance that in his fall his hip-joint bones were broken. Thereafter the court entered an order that, on a certain date, he should go to the office of a named physician and submit himself to a Roentgen-ray examination, to be made by the physician for the purpose of ascertaining whether or not one of his hip bones was broken and what his injuries were, the physician to report in writing the result of the examination, an attorney of each of the parties being allowed to be present at the examination. It was also provided in the order that Nolan should not submit himself to the examination if in the opinion of the physician danger was to be reasonably apprehended therefrom. On the appointed day he went to the physician's office with his attorney, who stated to the physician that Nolan had been exposed to the Roentgen rays four times within the past three weeks, and that they refused to allow him to make a roentgenogram unless he would be responsible for any trouble that might come from the use of the Roentgen ray, which responsibility the physician was not willing to assume, and no examination was made. The Court of Appeals holds that, when the case was called for trial a few days later, the defendant's motion that the trial be postponed that a Roentgen-ray examination might be made should have prevailed, on the facts stated, and that the defendant should not be forced to trial until the examination had been made, unless it was shown that it could not be made with safety to Nolan.

On the trial of the case the plaintiff introduced in evidence certain photographs taken of his legs and hips, and proved by his physician, who had examined him, that the photographs were a fair representation of their condition. The defendant objected to the introduction of the photographs in evidence, insisting that the plaintiff's person itself was the best evidence. There is some conflict in the authorities on the subject, but this court approves the rule adopted in some jurisdictions that the nude body of the plaintiff should not be exhibited in court, and that photographs of it may be given in evidence; but in order that the photographs may be introduced, it must be shown that they were fairly and correctly taken. Here there was no proof as to how the photographs were taken, and no proof that they were fairly taken; without this they should not have been introduced in evidence.

If the condition of any private part of the body of a male or female is material on any trial, and cannot be examined in court without an improper exposure of the person, it should, under an order of the court, be examined out of court by experts appointed for that purpose.

Society Proceedings

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Dec. 23, 1914

The President, DR. WILLIAM DUFFIELD ROBINSON, in the Chair

Surgical Treatment of Chronic Indolent Ulcer of Stomach

DR. CHARLES H. FRAZIER: There is no doubt that the incidence of organic lesions such as gastric and duodenal ulcer, compared with gastritis and other functional disorders, is greater than one would gather from the hospital reports. In my last fifteen cases, partial gastrectomy was performed in twelve instances for chronic ulcer alone, and in three for ulcer with carcinoma implanted. Of this number one patient, the fourth of the series, died. In diagnosis I have come to place reliance chiefly on the history and the roentgenogram. Operation is imperative in perforative ulcer, but surgery should not be thought of in cases of severe hemorrhage. I should ardently advocate surgical measures in chronic ulcer of the stomach and duodenum. In a series of 120 cases of gastric ulcer treated by medical measures, Parila (*Arch. f. Verdauungskr.*, 1912, xviii) showed that at the time of discharge from the hospital, 86 per cent. were completely cured or very much improved; only sixteen, or 13 per cent., were improved but not cured. Mostly within two years after this series of 120 patients left the hospital, 30 per cent. had died; 5 per cent. were unimproved; 35 per cent. improved (that is, they had either to live on a very restricted diet or were unable to resume their occupation without return of symptoms), and 30 per cent. were entirely well. In reporting 1,000 operations for gastric and duodenal ulcer, W. J. Mayo advises that the treatment of all duodenal and obstructing ulcers of the pyloric end of the stomach by gastrojejunostomy and excision, or infolding the ulcer, is satisfactory, and gives 98 per cent. of cures or great improvement. Secondly, 85 per cent. of ulcers of the body of the stomach will be either cured or greatly relieved by excision or suture compression with gastrojejunostomy. The remaining 15 per cent. will be more or less benefited, and so far as we have observed,

none has been made worse by operation. The mortality of the surgical treatment of chronic gastric and duodenal ulcer is well under 2 per cent. My mortality for simple gastrojejunostomy in gastric and duodenal ulcer, excluding perforation, is under 2 per cent.

In the chronic callous ulcer of the stomach, the transverse resection, or partial gastrectomy as proposed by Rodman, is the operation of choice. In considering whether these ulcers shall be treated by gastrojejunostomy with or without pyloric exclusion, by excision or by partial gastrectomy, three essential and equally important factors are: the risk at operation or the immediate outcome; the incidence of cancer or the intermediate outcome, and the eventual condition of the patient or the end result. Greater care in the selection of cases and early recognition of symptoms will greatly reduce the mortality statistics. Furthermore, in starved cases of gastric ulcer, the treatment may be begun by a jejunostomy under local anesthesia, and the final operation may be delayed until, by feeding, a safe margin of vitality has been attained. In none of the results following partial gastrectomy in my own series has there been a suggestion either of recurrence of symptoms or of unpleasant consequences. In von Eiselsberg's series of 334 gastro-enterostomies for ulcer of the stomach and duodenum, there were seventeen deaths, a mortality of 5 per cent. The majority of these were, however, recent ulcers, and death was due in seven instances to recurring hemorrhage which the operation did not stop. Of the surviving patients, a little over half were recorded as cured, about one-seventh as improved, and thirty-one as unrelieved, of which eight were cases of duodenal ulcer. Of forty-one out of 334 patients who were known to have died at various times after gastro-enterostomy, twenty-three were traced, and of these thirteen, or more than half, died of cancer of the stomach, and six, or a quarter, of extension of the disease. I advocate operation in cases in which (1) because of recurrent hemorrhage the patient despite medical treatment, becomes progressively more anemic; (2) there is obstruction with retention; (3) the patients are disabled through pain or starvation, and (4) the diagnosis is uncertain as between chronic appendicitis, gall-bladder disease, or ulcer. The nearer to middle life the patient is, the more urgently do I emphasize the need of operation for fear of cancer. Transverse resection offers the greatest assurance of a complete and enduring "cure."

Simulation of Gastric and Duodenal Ulcer by Adhesions, Duodenal Dilatation, Visceroptosis, Etc.

DR. GEORGE P. MULLER: The most important feature of the history in duodenal and pyloric ulcers is the periodicity of attack. The most constant single symptom is pain. A right-sided tender point, occult blood, hyperchlorhydria and hypersecretion are also of affirmative importance, but their absence must never negative the diagnosis. The Roentgen-ray finding, next to the history, is the one important means of diagnosis, and the finding of hyperperistalsis and a residue in the stomach at the end of six hours make the diagnosis of duodenal ulcer probable. There are certain cases in which it is difficult to make an exact diagnosis. Ulcer of the pylorus and duodenum without complication, however, are usually clear-cut in symptomatology. In ulcer of the stomach proper, the attacks are not so clear-cut, and the symptoms are apt to be continuous for long periods, are not often eased by food and are more often affected by the taking of food. In the later stages of pyloric and duodenal ulcer, stenosis produces the symptoms of gastric dilatation. In all of these cases the Roentgen rays are of the greatest help. Any patient over 40 who has chronic gastritis or dyspepsia, or a so-called acute gastritis which does not disappear promptly, must be suspected; if he loses weight, strength and appetite, and has a continuance of his dyspepsia, he must be labeled cancer until it can be proved that the condition is due to another cause.

We should be cautious in making a diagnosis of ulcer in a patient previously operated on, unless we have eliminated the possibility of an omental adhesion dragging on the stomach and producing similar symptoms. It should be remembered that duodenal ulcer and appendicitis are often associated. Just as appendicitis may reflexly produce stomach symptoms, so will the mobile cecum and the Lane kink produce symptoms of "dyspepsia," although never quite simulating ulcer. Duodenal dilatation may simulate duodenal ulcer. In considering appendicular gastralgia or appendiceal dyspepsia, as it is variously called, we must distinguish between appendicitis with ulcer and appendicitis with symptoms simulating ulcer. There is no such lesion as chronic appendicitis. Inflammation is an acute process, and what we really mean when we speak of chronic appendicitis is that as a result of acute lesions, obliteration of more or less of the lumen, stricture of the lumen, peritoneal adhesions of fecal concretions exist. It should be remembered that chronic appendicitis with gastric symptoms may be simulated by the action of congenital bands and membranes persisting in the right iliac fossa. Chronic tuberculous diaphragmatic pleurisy may resemble gastric ulcer. Hematemesis is an uncertain indication for operation, and usually suggests some toxic erosion rather than surgical ulcer. The differential diagnosis of gastric ulcer or gallstone colic, and the gastric crises of tabes dorsalis, is well nigh impossible, unless the other characteristic symptoms of locomotor ataxia are detected. There are other conditions and lesions simulating gastric ulcer. The history is the keynote in diagnosis.

DISCUSSION

DR. EDWARD H. GOODMAN: Internists and surgeons, it is evident, are practically in accord in the treatment of gastric and duodenal ulcer. Some cases of gastric ulcer are seen late by the surgeon because it is very hard for the internist to impress on the patient the need of operation. The indications given for surgical interference are agreed to by the majority of internists. I am not entirely in accord with Dr. Muller in believing that the symptoms of duodenal and gastric ulcer are essentially the same. I think they can be differentiated. I agree with him that the roentgenogram is the most important diagnostic help. I would emphasize the importance of observation of the patient for six months after operation, with examination of the stools for bleeding and to know that the ulcer has healed.

DR. WILLIAM L. RODMAN: I agree with Dr. Muller that in the diagnosis of gastric ulcer we should rely first on the clinical history, and next on the roentgenogram. I do think however, that there will be cases in which diagnosis is impossible without an exploratory laparotomy. While I recognize the value of the Roentgen ray, I do not place the percentage of positive diagnosis by its use at so high a figure as 85. The impaired motility that comes with cancer is of great value in diagnosis. Roentgenograms frequently indicate the presence of hour-glass contraction when such is not the condition. I would emphasize the point made by both Drs. Muller and Frazier as to the inadvisability of operation in acute hemorrhage; chronic hemorrhage which is sapping the vitality of the patient calls for operation in nearly all cases. In addition to the ordinary means, I have found the injection of very hot water into the stomach valuable in the arrest of hemorrhage from either gastric or duodenal ulcer. I agree with Dr. Frazier that if the ulcer be a duodenal one or a pyloric one near the outlet, producing a constriction of the pylorus, gastro-enterostomy is always a satisfactory operation so far as the relief of symptoms is concerned; but that it is not the operation of choice even in these cases, because of the cancer incidence in this region. We should keep before us the fact that there are 75,000 deaths from cancer in the United States annually, and 26,000 from cancer of the stomach. According to Leopold, 35 per cent. of all cancers are in the stomach. More operations should be done in the precancerous stage, because very few cases of cancer that can be diagnosed clinically can be cured by operation. The most unsatisfactory thing about gastro-enterostomy is that many of the patients will rapidly convalesce, but that they die in eighteen months, and you feel sure that cancer was present at the time of operation. I would emphasize the point made by Dr. Frazier that it is not only impossible

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clinically to differentiate between cancer and ulcer, but that the diagnosis cannot be made at the operating table. In three cases out of four, when we remove suspicious ulcer it proves to be carcinoma.

DR. FRANCIS J. DEVER: The actual diagnosis of gastric or duodenal ulcer is not so easy as it would appear to be. A large number of patients have no pain, and no bleeding from the stomach and rectum, and have a normal or subnormal quantity of hydrochloric acid in the stomach contents. We are, therefore, apt to be led astray by our insistence on the presence of certain symptoms. The occult blood test is valuable if all the antecedent conditions are proper. Blood may show in the feces, but it is well to remember that many patients have hemorrhoids. The use of the stomach tube in diagnosis should be restricted because of the danger of perforation and hemorrhage. It use is not justified except in the most obscure cases. It must be remembered also that gastric ulcer may be associated with gall-stones, appendicitis, etc. The differential diagnosis between gastric or duodenal ulcer and carcinoma is unimportant, because if we are not sure whether the patient has carcinoma, it is time to refer him to the surgeon.

DR. DAVID RIESMAN: The subject of gastro-intestinal disease was quite sterile and unprofitable until the surgeon attacked it. Of course, the surgeon has many advantages; he sees the patients generally in the hospitals; the medical man sees them in the office, in their homes, in the dispensary and in hospital practice. He cannot, therefore, obtain accurate data from all patients, and he cannot follow them as well as the surgeon who has operated on them. I believe there is no one symptom that diagnoses ulcer of the stomach or duodenum. If the history were so absolutely reliable as has been indicated, the Roentgen ray would be unnecessary; yet the surgeons depend on it to confirm the diagnosis, which many say can be made without seeing the patient. The atypical case is the one in which one needs the Roentgen ray and all clinical and laboratory help possible. The most important feature is the periodicity of the attacks. I agree with Dr. Frazier on the indications for operation. I believe we must accept the surgical experience on the frequency of cancer developing on ulcer.

DR. JAMES M. ANDERS: Cholelithiasis and duodenal ulcer are often confused with one another. The pain in cholelithiasis is almost periodical, at times coming on in a couple of hours after meals. In such cases the pain may be controlled by a change from a solid to a liquid diet. The pain in cholelithiasis is the more severe. When sufficiently intense to demand morphin, the condition may be ascribed to gallstones, as a rule, rather than to duodenal or gastric ulcer. This point of difference is worthy of being emphasized. I have collected all of the cases of duodenal ulcer to be found in the literature, 262 cases, and in more than one-half, the cause was of intraduodenal origin. The obstruction in most cases was only partial, due to a healing or healed duodenal ulcer, and the symptoms were indefinite, but they were those of dilatation of the stomach indistinguishable from ordinary pyloric or partial pyloric obstruction when the seat of obstruction was above the ampulla of Vater. These cases have for the most part been diagnosticated duodenal ulcer in the active stage because there was a previous history—sometimes, however, years before—of the symptoms of duodenal ulcer. I think it is important to remember the frequency with which duodenal stenosis occurs, and that the symptoms when the stenosis is above the ampulla of Vater cannot always be differentiated from those of pyloric obstruction, although in many cases the history would include the symptoms of duodenal ulcer preceding, often by many years, the indications of partial stenosis.

DR. ERNEST LAPLACE: Although Dr. Muller says there is no such condition as chronic appendicitis, there are cases in which the appendix shows signs of having been inflamed and in which it is bound down by adhesions. This does not necessarily mean that the disease existed continuously for a long time, but that at one time the appendix has been inflamed, causing changes which will produce the set of symptoms that are interpreted as chronic appendicitis.

DR. S. SOLIS-COHEN: I am not impressed by the absence of definite symptoms of ulcer in a history in cases in which the other indications point to a serious lesion, for there are many classes of patients—some who exaggerate, some who ignore, some who describe symptoms perfectly; some, not at all. Until the cause of gastric ulcer is entirely settled, I doubt whether we shall be able to discriminate as closely as we might desire between operative and non-operative cases in which the diagnosis of gastric ulcer is positive.

NEW YORK NEUROLOGICAL SOCIETY

Meeting held Dec. 1, 1914

(Concluded from page 464)

Pain and Tenderness in Spinal Disease, and Its Surgical Treatment

DR. CHARLES A. ELSBERG: In 100 spinal operations I noted that there was a marked difference between the cervical and the dorsal spinal roots in structure as well as in course: the cervical roots originated from the cord over an area from 1 to 2 cm. wide, and ran as separate bundles to the dura, while in the dorsal region the bundles soon united to form one nerve root. Therefore, in the cervical region, a tumor could press on a few of the root bundles and give rise to symptoms from those bundles only, so that one should differentiate between root bundle symptoms and root symptoms. In several cases, pressure on the lower root bundles of the seventh cervical posterior root produced pain limited to the index finger. In the dorsal region, the roots first run downward, bending upward again at a very acute angle. Further investigation has shown that the outer surface of the dura of the spinal cord is very sensitive, while the cord itself is insensitive excepting near the origin of the posterior roots; the posterior roots themselves are very sensitive. Taking these facts into account, it is easy to understand how a small focus of malignant disease in the posterior and lateral surface of the body of a vertebra can cause very acute root pains. Extramedullary tumors which do not press on nerve roots might cause pain in the back from pressure on the inner surface of the dura, especially if they lie in front of the slip of the dentate ligament.

In several cases of extradural tumor I observed a peculiar set of symptoms. There was a sort of reverse Brown-Séquard, the motor symptoms being on the opposite side and the sensory symptoms on the same side as the tumor. In these cases there was a collection of fluid under the dura on the side of the tumor, which pressed the spinal cord to the opposite side against the walls of the spinal canal, so that the motor symptoms were due to the pressure of the contralateral pyramidal tract against the bony wall of the canal. This could be called *contre-coup*, and was similar to what occurs in the posterior cranial fossa when a cerebellar tumor of one side pushes the cerebellum to the other side and causes the facial nerve of the contralateral side to be pressed against the petrous portion of the temporal bone, with resulting facial paralysis on the side opposite to the lesion. I also noted peculiar anomalies of the spinal vessels which gave rise to irregular symptoms and which have not heretofore been described.

DISCUSSION

DR. J. RAMSAY: The vertebral pain associated with spinal tumors, I have always explained on the basis of a localized meningeal irritation. This pain is usually bilateral, and has not the unilateral distribution of the root pains. Dr. Elsberg did well to emphasize the importance of cutting the posterior root where it has been subjected to pressure for a considerable length of time. I should like to ask him as to the advisability of cutting these roots for the relief of a long-standing unilateral spasticity, when the site of operation exposes the necessary root distributions. The possibility of contralateral pressure symptoms occurring in connection with lesions of the cord is of extreme interest. The mechanism of contralateral pressure is recognized as a rare occur-

rence in the hemispheres of the brain and also in the brain stem, in which event its recognition would be of great importance from the operative point of view.

DR. I. ABRAHAMSON: I have seen two cases in which marked changes of the vessels of the cord were present. One specimen did not show any dilatation of the vein—only a moderate hyaline degeneration of its walls. These cases were quite typical in their symptoms, and were in sharp contrast to those common to extramedullary tumors of the cord. In the latter, the motor symptoms were markedly predominant, with root symptoms at the level, while the cases with varicose vessels showed a marked preponderance of the sensory symptoms, the motor symptoms never equaling the sensory in their intensity. The finding of this dilated blood vessel at the exact level and position that was indicated by the signs and symptoms left but little doubt as to its etiologic importance. When one has to deal with a rather atypical level cord picture suggesting an intramedullary lesion, and yet not characteristically so, associated with slight motor symptoms and marked sensory symptoms, one should be on the lookout for this condition of varix or a type of angioma of the cord.

DR. FOSTER KENNEDY: Apropos of angioma of the cord producing symptoms referable to the interior of the cord rather than to pressure on the outside of the cord—that is, intramedullary rather than extramedullary, it is well to bear in mind that a chronic syphilitic pachymeningitis of long duration very frequently produces such circulatory conditions, usually by nipping of the blood vessels, so as to cause a breaking down of the interior of the cord, a syphilitic syringomyelia. Does Dr. Elsberg regard these symptoms as being due to the direct pressure of the varix or to the circulatory disturbance produced thereby; in other words, are the symptoms mechanical or circulatory?

DR. ALFRED S. TAYLOR: One must be careful not to attribute too much importance to the presence of these varices. There is a considerable space between the cord and the dura, and I recall several cases in which I observed large veins in this location, and a simple decompression had given perfectly satisfactory relief, the condition probably being one of inflammation in the cord, and the enlarged vessels being an expression of such inflammation.

DR. C. A. ELSBERG: As to the advisability of cutting the posterior nerve roots for the relief of spasticity, I should advise such a step only in cases in which the cord had been subjected to pressure for a long time, perhaps four, five or six years, and had been injured beyond the hope of recovery. As to the significance of these enlarged vessels, I am convinced that they were not the ordinary congested vessels accompanying an inflammatory process. The veins were from six to eight times their normal size, larger than the radial artery. In 114 spinal operations, I have observed this peculiar enlargement six times; ordinary slight inflammatory enlargement I have seen many times.

The Response of the Organism to Environment.—One of the most remarkable features of organic evolution is that it results in the adaptation of the organism to its environment, and for this adaptation mutation and hybridization utterly fail to account. Of course, the argument of natural selection is called in to get over this difficulty. Those organisms which happen to exhibit favorable mutations will survive and hand on their advantages to the next generation, and so on. It has frequently been pointed out that this is not sufficient. Mutations occur in all directions, and the chances of a favorable one arising are extremely remote. Something more is wanted, and this something, it appears to me, is to be found in the direct response of the organism to environmental stimuli at all stages of development, whereby individual adaptation is secured, and this individual adaptation must rise again and again in each succeeding generation. Moreover, the adaptation must . . . tend to be progressive, for each successive generation builds on a foundation of accumulated experience and has a better start than its predecessors.—Arthur Dendy, *Medical Journal of Australia.*

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

January, XVII, No. 2, pp. 161-244

1 Origin of Lymphatics in Bufo. O. F. Kampmeier, Pittsburgh.
2 Statistical Study of Thoracic Duct in Man. H. K. Davis, Ithaca, N. Y.

Archives of Internal Medicine, Chicago

January, XV, No. 1, pp. 1-180

3 *Ventilatory Function of Lung in Emphysema and Asthma. C. F. Hoover and L. Taylor, Cleveland.
4 *Effect of Intravenous and Intraspinal Treatments of Cerebrospinal Syphilis. G. Draper, New York.
5 Mechanism of Labyrinthine Nystagmus and Its Modifications by Lesions in Cerebellum and Cerebrum. J. G. Wilson, Chicago, and F. H. Pike, New York.
6 *Relation of Pancreatic Organotherapy to Ketogenesis. E. G. Kirk, Chicago.
7 *Pathologic Physiology of Heart. C. J. Wiggers, New York.
8 *Distribution of Iodin in Cell Following Administration of Organic Iodin Preparations. F. C. McLean, Portland, Ore.
9 Statistics of Pellagra in Spartanburg County, S. C., Including Geographic Distribution of Disease and Its Relation to Race, Age, Sex and Occupation. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.
10 *Mental and Nervous Disorders Associated with Pellagra. H. D. Singer, Kankakee.
11 Blood-Count in Pellagra. O. S. Hillman and P. A. Schule, New York.
12 *Streptococcus Viridans in Its Relation to Infections of Upper Respiratory Tract. R. L. Cecil, New York.
13 *Case of Independent Ventricular Activity Occurring During Acute Articular Rheumatism. S. Neuhof, New York.

3. **Ventilatory Function of Lung in Emphysema and Asthma.**—The real difficulty of ventilation in emphysema and asthma, according to Hoover and Taylor, lies in the distention of the infundibula, and this fails to allow an equal diffusion of carbon dioxid throughout the alveolar air.

4. **Intravenous and Intraspinal Treatment in Cerebrospinal Syphilis.**—Twenty-five cases are analyzed by Draper. Symptomatically they have been arranged so that pain predominates at one end of the series and psychic disturbance at the other. These twenty-five patients were all treated intensively for active syphilis. All but one received combined intravenous and intraspinal injections. Mercury and potassium iodid were also used, but the chief reliance and interest were centered on the action of salvarsan, neosalvarsan and salvarsanated serum. Intravenously most of the patients were treated at weekly intervals with doses of salvarsan varying from 0.3 to 0.6 gm., or neosalvarsan in full doses. Salvarsan was the drug of choice and was changed for neosalvarsan only when the patient had an anaphylactic reaction. Intraspinally most of the cases received 30 c.c. of 50 per cent., or from 20 to 25 c.c. of full-strength serum, separated by centrifugalization from blood withdrawn forty minutes after the intravenous dose of salvarsan. The serum was heated to 56 C. and was introduced intraspinally the same day. Several patients have been bled before the intravenous dose, and then salvarsan up to a milligram added in vitro to the serum. This mixture was heated to 37.5 C. for forty minutes, and then 56 C. for half an hour. No serious symptoms followed any of the injections. Clinically very marked improvement occurs in all groups of cases. In the spinal types pain is usually relieved; ataxia helped in most instances, and not very markedly in a few. The bulbar types and those with fairly pronounced psychic disturbances, depending perhaps on meningeal irritation, show marked improvement in symptoms as well as in spinal fluid. The more definite psychic disturbances also may clear up completely, but their spinal fluids cannot in every case be brought to normal. The cell-count has almost always been reduced in them but the Wassermann test rarely disappears below 0.3 c.c.

In some cases, especially those treated with serum salvarsanized in vitro, transient numbness in the feet has appeared;

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in other cases a slight failing in general robustness which may be an arsenic effect; and in several instances rather severe pains following the intraspinal injection have been seen. In two cases there has been a sudden increase in ataxia following a period of definite improvement. It is unsafe to give more than two, or at most three, consecutive injections of serum to which salvarsan has been added directly. In no case should more than 0.0005 gm. be added. On the other hand, apparently any number of intraspinal injections may be given with impunity when serum salvarsanized in vivo is used.

6. **Pancreatic Organotherapy and Ketogenesis.**—Kirk summarizes the results of his studies as follows: In the severe or total pancreatic diabetes of dogs, ketonuria of sufficient intensity to be demonstrable by the qualitative tests always develops provided the animal survives several days, and is on a diet covering its calorific requirements. The "total acetone" figures for adult normal dogs of from 5 to 15 kg. weight run about 0.005 to 0.1 gm. per diem. After total or near total pancreatectomy and on complete starvation (except for water), there is a slight gradual increase to about 0.01 gm. up to 0.09 gm. per diem. By judicious administration of a low calorie mixed diet after pancreatectomy the total acetone figures may be kept down to about the latter limits. Heavy protein diets of any sort exert a ketogenetic influence on the diabetic organism. Thus the feeding of an exclusive protein diet of lean beef for several days invariably precipitates a ketonuria appreciable by ordinary qualitative tests, the total acetone going up to 0.1 to even 0.4 gm.

On dynamogenetically equivalent amounts of raw pancreas the total acetone always increases greatly to 0.5 to 0.7 or even over 0.1 gm. per diem, which represents tremendous amounts for dogs; the color reactions have a maximum intensity. Such increases occur on a single feeding of pancreas. The feeding of raw liver is responded to by a greater ketonuria (0.3 to 0.4 gm.) than that following muscle feeding, but not nearly so marked as the reaction after pancreas. These differences were proved to be not due to variations in protein content or in glycogen content. Kirk doubts whether this ketogenetic influence of pancreatic opotherapy is altogether specific. Yet, in view of the consideration that it is so much greater for pancreas than for other representative protein foods we cannot deny the possibility of its being specific. As to the mechanism of its action, Kirk holds that it is not referable to increased absorption of protein or of fats, although both these are factors in additional increase of ketogenesis. It may be associated with increased intermediate metabolism of body-fat; he has not attempted to prove this. It is probably a toxic action, comparable to the increased glycosuria demonstrated by Reach on pancreas feeding. Doubtless such toxic influences are largely directed toward the hepatic functions. If views as the nature of diabetic acidosis be classified into two groups, namely, (*a*), those maintaining that this is a condition *sui generis* and (*b*) those holding it to be due solely to carbohydrate deficiency, then Kirk believes his experiments tend strongly to show that "acidosis" in dogs may vary independently of the status of carbohydrate ingestion and metabolism.

7. **Pathologic Physiology of Heart.**—The details of the pressure changes in the auricles, ventricles and aorta during auricular fibrillation were studied by Wiggers by means of optically recording manometers of high vibration frequency. The results obtained were as follows: Intra-Auricular Curve.—In experimental animals the fibrillating contractions in the auricle in themselves produce no intra-auricular pressure waves. The strong ventricular contractions cause a sharp oscillation in the auricle during early systole, while weaker contractions often cause a single rounded wave or a double oscillation similar to *c* and *v* waves of the normal pulse. When, as often happens, two or three weak contractions which produce no pulse in the arterial system follow each other, a series of small waves are created in the auricle (two to each ventricular systole) which gives the erroneous impression that they occur during ventricular diastole. Intraventricular Pressure Curve.—The intraventricular pressure curves show that the ventricle contracts at a very irregular rate. The height of the pressure and the gradient of the isometric rise before the semilunar valves open is determined largely by the interval between contractions. Hence, whenever the pace is set too rapidly a series of inefficient systoles results which may cause the arterial pressure to fall and the ventricle to dilate. As these weaker contractions often begin before the *a-v* valves are open and are not strong enough to open the semilunar valves, it follows that such contractions may be accompanied by no audible sound. It is important to realize this clinically in estimating the ventricular rate by auscultation in such cases. Central Arterial Pulse.—Since the aortic pressure is affected only by those systoles which elevate intraventricular pressure above the arterial diastolic pressure, it follows that the contour and amplitude of the arterial waves depends not only on the strength of ventricular contraction, but on the diastolic pressure as well. Since the venous pulse tracings taken from the supraclavicular region are always complicated by arterial impacts from the central arteries, the failure to recognize this may lead to misinterpretation of the systolic wave groups. The failure to recognize that the arterial pulse amplitude is not a criterion of the strength of the heart-beat in such cases has given rise to the erroneous impression that the strength of the ventricular systoles follows no law, whereas the intraventricular pressure curves show that the vigor of ventricular systole is largely governed by the time relations between contractions.

8. **Iodin in Cell Following Administration of Organic Iodin Preparations.**—McLean found that the iodin derivatives of fats and fatty acids are absorbed in a lipoid-soluble form after administration by the gastro-intestinal tract or subcutaneously, and are taken up and held in part by the lipoids of the cells. Iodalbin loses its identity during the process of absorption, and its iodin appears in the tissues entirely in water- or alcohol-soluble combination.

10. **Mental and Nervous Disorders Associated with Pellagra.**—Singer says that mental disturbance occurs in about 40 per cent. of all cases of pellagra. Such disturbances are more frequently with repeated attacks. Children are practically exempt. They are most common in men between 21 and 40, and women about 41 to 60. About 95 per cent. of the mental disorders are the direct result of the pellagrous intoxication, and although the mortality in such cases is much higher than in cases without such disorder, yet the mental disturbance will fully recover if the patient survives. They correspond to similar disturbances in other somatic diseases and in such case are often described as not "insanity." The remaining 5 per cent. are examples of mental disorder primarily dependent on the individual's make-up, or else are merely concomitant. Faulty nervous organization, including inadequate mental adaptability, seems to be associated with a predisposition to pellagra. This seems to afford the most satisfactory, even if only partial, explanation of the extraordinary frequency of pellagra arising among the insane, the increased frequency of functional psychoses and psychoneuroses and of nervous disease of the congenital anomaly type among pellagrins as compared with more normal individuals. Chronic "insanity" due strictly to pellagrous intoxication, if it occurs, is rare. Chronic nervous disease as the result of pellagra, if it occurs, is exceptional.

12. **Streptococcus Viridans and Infections of Upper Respiratory Tract.**—In a bacteriologic study made by Cecil of eighty-nine infections of the upper respiratory tract, the *Streptococcus viridans* has been the predominant organism in fifty cases, or 56.2 per cent. If the cases in which the pneumococcus or *Streptococcus hemolyticus* were predominant be added to this group, it can be said that in 85 per cent. of the cases studied, one or the other of these closely allied species was apparently concerned in the infection. *Streptococcus viridans* infections of the upper respiratory tract are characterized by their mild course and a tendency to chronicity and frequent recurrences, owing in great measure to the short duration of the acquired immunity. *Streptococcus viridans* infections of the upper respiratory tract, especially those of the tonsils, sinuses and alveolar sockets, are frequently asso-

ciated with endocarditis and arthritis. In these cases there is much evidence in favor of the theory that the infections of the serous membranes are secondary to the infections of the upper air passages. Autogenous *Streptococcus viridans* vaccines are of considerable value in cases in which structural changes are not too far advanced. Their administration may also be useful in the prevention of recurrences.

13. **Independent Ventricular Activity.**—A case of independent ventricular activity is described by Neuhof. The lowest ventricular rate is 56 per minute, the usual rate is 60 and remains so whether ventricular automatism is present or not. The electrocardiographic complexes of all beats are identical. At one time atropin injection is followed by ventricular escape. The occurrence of the automatic activity during the course of acute articular rheumatism and its disappearance later and a study of the physical signs make it possible that a small transient myocardial inflammatory focus at or near the auriculoventricular connections is the irritative cause of the abnormal mechanism.

Archives of Pediatrics, New York

December, XXXI, No. 12, pp. 881-952

14 Measles: Incubation, Infectivity, Immunity, Early Manifestations. C. Herrman, New York.
15 Causes and Treatment of Chronic Conjunctival Affections in Childhood. A. W. Williams, New York.
16 Record Charts for New-Born. W. L. Carr, New York.
17 Hemiparesis and Hemiplegia as Early Symptoms of Tuberculous Meningitis. Report of Two Cases. L. W. Sauer, Chicago.
18 Cause and Cure of Night Terrors in Children. T. A. Williams, Washington, D. C.
19 Simple Syringe Method for Transfer of Blood from Donor to Recipient. A. Zingher, New York.

Boston Medical and Surgical Journal

January 21, CLXXII, No. 3, pp. 81-120

20 Compensatory Exercises as an Aid in Treatment of Locomotor Ataxia. H. M. Swift, Portland, Me.
21 *Diabetes and Surgery. E. H. Risley, Boston.
22 Differentiation of Human and Cows' Milk by Color Tests. R. S. Eustis, Boston.
23 Recovery from Coccidioidal Granuloma. S. B. Wolbach, Boston.

21. **Diabetes and Surgery.**—The following rules are laid down by Risley in regard to operations on diabetics: (a) A thorough examination of the urine must be made in every case, especially for the detection of acetone and diacetic acid. (b) The total amount of ammonia must always be estimated. No operation except of the extremest emergency should be performed if there is 1 gm. of ammonia excreted in twenty-four hours, until this has been reduced to the normal amount, 75.9 gm. (c) An operation should be postponed should there be acetone or diacetic acid, even if the amount of ammonia is normal. (d) Much albumin in the urine is a contra-indication to operation and even in small amounts is of bad prognostic import. Most of the major operations of surgery have been and can be performed with success on diabetics. In Phillip's extensive series gathered from the literature the percentage of recoveries was 72.28, or a mortality of 27.72 per cent. The use of an anesthetic other than ether and chloroform, careful dietary treatment before operation, the prevention of sepsis and rapid technic will still further reduce the mortality.

Colorado Medicine, Denver

January, XII, No. 1, pp. 1-33

24 Andreas Vesalius. C. E. Edson, Denver.
25 Brain Abscess of Otitic Origin. F. Lassen, Pueblo.
26 Twilight Sleep. C. B. Ingraham, Denver.
27 Epidemiology of Poliomyelitis. J. W. Amesse, Denver.
28 Pathology of Acute Anterior Poliomyelitis. R. C. Whitman, Denver.
29 Clinical Aspects and Early Treatment of Acute Anterior Poliomyelitis. F. P. Gengenbach, Denver.
30 Modern Views on Biliary Calculosis. J. L. Mortimer, Denver.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

January, VI, No. 3, pp. 283-411

31 *Action of Strophanthin on Suprarenal Secretion. A. N. Richards and W. G. Wood, Philadelphia.
32 *Action of Conessin and Holarrhenin Alkaloids of Holarrhena Congolensis, and also of Oxyconessin. J. H. Burn, London.
33 *Studies on Action of Various Drugs on Vasomotor Center. J. D. Pilcher and T. Sollmann, Cleveland.

31. **Action of Strophanthin on Suprarenal Secretion.**—Experiments are described by Richards and Wood which show that the intravenous injection of strophanthin into dogs and cats is regularly followed by the development in the blood of capacity to cause decrease of tonus and inhibition of contractions in an isolated strip of intestinal muscle in a manner indistinguishable from that possessed by epinephrin. This result is not obtained after section of the splanchnic nerves or of the spinal cord between the fourth and fifth cervical nerves. This is evidence that strophanthin is capable of stimulating the central nervous mechanism controlling the secretion of the suprarenal glands. Experiments are also described which indicate that digitoxin has the same capacity in a high degree; but that strychnin and camphor are decidedly less active.

32. **Action of Conessin and Holarrhenin.**—The alkaloids of holarrhena congolensis, namely, conessin and holarrhenin, Burn states, have a very similar physiologic action, the former being more powerful than the latter. They both exert a considerable narcotic action on frogs, but in mammalia this effect is inappreciable. They also possess a local anesthetic action particularly marked when tested on the rabbit's eye. This property is of no practical value, as both alkaloids produce local necrosis when injected subcutaneously. Both conessin and holarrhenin are cardiac poisons, causing the isolated perfused heart to come to a standstill half way between systole and diastole. They possess a particularly destructive action on the tissue of A-V bundle, and even when injected intravenously produce incoordination, or heart-block. In small doses both alkaloids produce a rise in blood-pressure when injected intravenously. This rise is still seen after paralysis of the vacoconstrictor nerve endings with ergotoxin, and must therefore be due to a direct action on the blood vessel walls. Oxyconessin, an artificial oxidation product of conessin, has somewhat different properties. It possesses a curare action on the frog, but appears to have no general or local anesthetic action. When injected intravenously it produces marked cardiac acceleration and consequent rise of blood pressure. It has no true vasoconstrictor action.

33. **Action of Drugs on Vasomotor Center.**—According to Pilcher and Sollmann nitrites (sodium and amyl nitrite, nitroglycerin) usually stimulate the vasomotor center moderately; they never depress it directly. The nitrite fall in pressure is, therefore, purely peripheral. The stimulation of the center is probably secondary to the anemia from the lowered pressure. Nitrites and various pressor agents are mutually antagonistic. It is, therefore, suggested that the point of attack of nitrites differs essentially from that of pressor agents. Very large therapeutic doses of strychnin (0.05 mgm. per kilogram)—large enough to be dangerous under certain conditions are usually without action on the vasomotor center, but may stimulate the center moderately. Epinephrin has no direct effect on the central vasomotor apparatus. Frequently there may be slight central stimulation referable to increased pressure. Exceptionally dilatation may result, namely, when the increased blood supply relieves a preexisting asphyxial stimulation result.

In therapeutic doses, camphor is probably without action on the vasomotor center. Doses approaching the convulsive may cause moderate stimulation, which is greatly exaggerated when convulsions occur. Chloroform directly depresses the vasomotor center, but under certain conditions the center may be stimulated indirectly; when the blood pressure falls rapidly from cardiac depression or from cardiac arrest, or when asphyxia is induced either by direct respiratory depression or by depression of the oxygenating functions. Under such conditions there may be intense stimulation of the vasomotor center, with or without preceding depression of the center. Chloroform abolishes the effect of pressor reflexes (faradization of the sciatic

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nerves) at a higher level of blood pressure than such reflexes are ordinarily lost. The "vasomotor reversal" of Bayliss was also witnessed in one experiment.

Cyanids cause intense stimulation of the vasomotor center. This stimulation is probably asphyxial, as cyanids prevent the utilization of the oxygen in the blood independent of normal respiration. The rise of blood pressure caused by cyanids is proportional to the vasomotor stimulation. Non-toxic doses of aconite are without effect on the vasomotor center. Toxic doses of aconite produce maximal stimulation of the center, more intense than that from strong stimulation of sensory nerves. This is probably the main factor in the rise of blood pressure. Nicotin causes intense stimulation of the vasomotor center. There is no evidence of paralysis of the center; in fatal cases death results from other causes, while the tone of the center is still greatly above normal. Spartein is without direct action on the vasomotor center; but the depression of the respiration tends to produce asphyxial stimulation of the center.

Phenol usually depresses the vasomotor center, probably from its direct toxic action. Actual paralysis was not produced by the doses used. The action may be modified by the convulsant effects and by the anemic stimulation of the center, so that the center may be stimulated, or a period of stimulation may precede or follow the period of depression. Cholin tends to produce a marked direct depression of the vasomotor center, which seems to play a large part in the fall of blood pressure, and which seem to be abolished by atropin. However, other causes contribute to the fall of pressure. When these predominate, they may overcome the central depression, and even produce stimulation, by the anemia. Ergot and ergotoxin have practically no effect on the vasomotor center. Histamin also has no direct action, but the fall of blood pressure and respiratory disturbance usually produce a moderate stimulation. Hydrastis and its alkaloids, hydrastin and berberin, and the derivatives hydrastinin and cotarnin, have no direct action on the vasomotor center. The center may be excited from respiratory depression, convulsive phenomena or cardiac arrest.

Strophanthus stimulates the vasomotor center moderately; digitalis not at all, or to a much less extent. In neither case is the central action sufficient to influence the total action of the drug. Fatal doses, resulting in sudden cardiac arrest, stimulate the center greatly from the resulting asphyxia. Ether does not produce any direct effect on the vasomotor center, or stimulates it moderately. Occasionally there is evidence of depression of the center, but in this work the ether was not pushed to the point of vasomotor paralysis. The stimulation of the center is probably largely the result of asphyxia from respiratory depression. The active principle of the infundibular portion of the pituitary gland has but slight effect on the vasomotor center. Occasionally there may be depression and somewhat more frequently moderate stimulation, but these changes are so inconstant that they are probably secondary to the rise of blood pressure (depression of the vasomotor center, as in McCord's experiments), or to respiratory embarrassment (stimulation of the vasomotor center, as in the non-curarized dog). The response to sciatic stimulation is not materially diminished during the pituitary rise. This indicates that the pituitary principles act peripherally on the arterial muscle. The intravenous injection of lactic acid, in doses 1 to 7 c.c. of the N/7 solution per kilogram of body weight, produces moderate and temporary stimulation of the vasomotor center, independent of the behavior of the blood pressure. This is presumably a manifestation of the general excitatory effect of the increased H ion concentration of the blood.

Journal-Lancet, Minneapolis

January, 15, XXXV, No. 2, pp. 25-52

34 Hair-Ball in Stomach: Other Foreign Bodies in Gastro-Intestinal Tract. W. C. Carroll, Rochester.
35 Notes from German Obstetric Clinics. J. Litzenberg, Minneapolis.
36 Construction of Medical Papers. M. H. Mellish, Rochester.
37 Emergency Surgery in Country Practice. Report of Cases. M. M. Grove, Dell Rapids, S. Dak.
38 Subphrenic Abscess. N. O. Ramstad, Bismarck, N. Dak.

Kentucky Medical Journal, Bowling Green

January 15, XIII, No. 2, pp. 53-86

39 Emphysema. E. M. Harrison, Forkridge.
40 Anterior Poliomyelitis. E. M. Howard, Middlesboro.
41 Corneal Ulcer; Its Complication and Sequelae. B. A. Cockrell, Pineville.
42 Gonorrhea and Its Treatment. T. T. Gibson, Middlesboro.
43 Fractures. C. K. Broshead, Middlesboro.
44 Medical Fads and Fancies Vs. Medical Facts. H. C. Chance, Middlesboro.
45 Diseases of Suprarenals. O. P. Nuckols, Pineville.
46 Rheumatic Fever. T. H. Curd, Middlesboro.
47 Cholecystitis. L. J. Jones, Middlesboro.
48 Vaccines and Serums. C. F. Clayton, Balkan.
49 Bone Grafting for Pott's Disease and for Ununited Fractures. E. W. Ryerson, Chicago.
50 Nephritis. L. J. Jones, Middlesboro.
51 Clinical Aspects of Carbohydrate Metabolism. L. Hamman, Baltimore.
52 *New Method of Examining for Movable or Floating Kidney. C. Pope, Louisville.
53 Gunshot Wound of Knee. W. Bach, Jackson.

52. **New Method of Examining for Movable or Floating Kidney.**—Pope's method is described as follows: With the abdomen bared (in women a sheet is thrown around the shoulders, covering the abdomen like a large shawl or a special kimona) the patient stands directly in front of the physician, who is seated in a chair. The right hand, or fist (if the right kidney), is placed on the right rectus and sufficient pressure made to overcome any rigidity. The patient is then instructed to lean forward over the right shoulder of the examiner (for the right kidney) and the tissues between the abdominal wall and the back are grasped between the thumb and fingers of the left hand (for the right kidney). By assuming the standing and forward bending position, the kidney moves or descends downward and forward toward the abdominal wall. In this position it is more easily accessible to the examining fingers. The thumb and fingers gently grasp the kidney between them and are thus enabled to detect whether the kidney is movable or not, and the extent or degree of movability. In examining the left kidney the process is reversed.

Lancet-Clinic, Cincinnati

January 16, CXIII, No. 3, pp. 55-80

54 Paranoia. E. A. North, Cincinnati.
55 Heart Irregularities—Auricular Fibrillation, Heart Block. J. E. Greiwe, Cincinnati.
56 *Certain Physical Signs Referable to Diaphragm and Their Importance in Diagnosis. R. Dexter, Cleveland.
57 Acute Gastric and Duodenal Perforating Ulcer. F. Fee, Cincinnati.

56. Abstracted in THE JOURNAL, Nov. 21, 1914, p. 1877.

Laryngoscope, St. Louis

December, XXIV, No. 12, pp. 963-1025

58 Conservative Treatment of Suppuration of Accessory Sinuses of Nose. E. B. Gleason, Philadelphia.
59 Cases of Inflammatory Affections of Labyrinth. W. C. Phillips, New York.
60 New Submucous Septal Operation. O. Tydings, Chicago.
61 Few Interesting Points in Regard to Bronchial Asthma and Severe Case Cured by Intranasal Surgery. W. T. Patton, New Orleans.
62 Retropharyngeal Abscess with Rupture, Asphyxiation and Death Following Acute Attack of Tonsillitis. C. C. Charlton, Atlantic City, N. J.
63 Elimination of Speech and Voice Defects. B. Cadwallader, Cleveland.
64 Electrode for Fulgurating Larynx. S. Yankauer, New York.
65 New, Direct-View, Self-Retaining Laryngoscope. M. Unger, New York.

Medical Record, New York

January 2, LXXXVII, No. 1, pp. 1-42

66 Artificial Pneumothorax. M. Fishberg, New York.
67 *Simple, Easily Regulable Method of Applying Abduction in Treatment of Shoulder Disability. W. M. Brickner, New York.
68 *Tuberculin in Pulmonary Tuberculosis. L. S. Peters, Albuquerque, N. M.
69 Diseases of Skin in Pregnancy. P. E. Bechet, New York.
70 Medical Inspection of Schools in Connecticut. F. H. Barnes, Stamford, Conn.
71 Suggestion in Cases of Late Operation for Intestinal Obstruction. J. C. Johnston, McAlester, Okla.
72 *Etiology of Pellagra. B. W. Page, Lumberton, N. C.

January 9, No. 2, pp. 43-84

73 Case of Syphilis of Cranium and Spine. G. F. Lydston, Chicago.
74 Obscure Causes of Disease. W. S. Gleason, Newburgh.
75 Intestinal Stasis. F. R. Starkey, Philadelphia.
76 Use of Pituitary Extract in Obstetric Practice; with Some Observations on Twilight Sleep. S. W. Bandler, New York.
77 *Significance of Von Pirquet Test. T. Frazer, Asheville, N. C.
78 General Use of Distilled Water. L. L. von Wedekind, U. S. Navy.
79 Reasons for Discrepancies in Reports on Wassermann Reaction, from Technician's Side. M. F. Schlesinger, New York.
80 Enormous Tumor (92 Pounds) of Uterus. O. H. Petty and R. L. Pitfield, Philadelphia.
81 Pemphigus Foliaceus Neonatorum. A. L. Henkin, Brooklyn.

67. **Method of Applying Abduction in Treatment of Shoulder Disability.**—This method is described by Brickner as follows: The patient is put to bed in semirecumbent position, supported on pillows, not too soft. He abducts the affected arm, on the pillow as far as he comfortably can. A muslin bandage is then looped lightly about the wrist and carried to a convenient spot on the headpiece of the bed, where it is fastened. The upper end of the bed is then raised on "shock blocks" or chairs. As the patient's body little by little slides down in bed his arm travels (relatively) further and further up, and thus a shoulder that obstinately resists forcible efforts at abduction yields steadily, painlessly, to this gradual countertraction, which the patient often does not even feel. Brickner states that a person whose shoulder for months has not been abducted, actively or passively, beyond 45 F. put thus to bed in the afternoon, may be found the next morning with his arm alongside his head. Few cases respond so quickly, however. The treatment may require a week, or even more, to restore full abduction.

The procedure can be variously modified. In those instances in which the condition does not demand, or the patient will not consent to continuous treatment, it may be employed only at night. It may be applied also, but not so satisfactorily, in a large reclining chair. If continued abduction grows painful or irksome it may be intermitted occasionally, the patient merely slipping his wrist out of the bandage loop and resting the arm on a pillow or by his side. In thus treating subluxation, however, the abduction should not be intermitted. A back-rest may be substituted if for any reason preferable to the exaggerated Fowler's position.

68. **Tuberculin in Pulmonary Tuberculosis.**—Beginning with a solution in which 1 c.c. is equivalent to 1/100,000 of a milligram Peters injects twice weekly until a point is reached at which a local reaction is manifest. This is a danger signal and he repeats the dose or drops back if the local reaction still continues. Passing this reaction point the injections are increased until another local reaction is noted when the same procedure is repeated. If at any time during the course of treatment a dose seems to agree with the patient as is evidenced by a drop in temperature, lower pulse-rate, less cough and expectoration, and a feeling of well being, Peters holds that dose and repeats it until the favorable effects disappear. The dose has outlived its usefulness and a rise is indicated. Sometimes a dose somewhat lower than this will do even better work. The dose is given twice weekly until 1/10,000 or 1/1,000 is reached, when Peters spaces them weekly. The treatment is continued so long as the patient does well or until an arrest of the disease is attained. If at any time hypersensitiveness develops, discontinue the treatment, otherwise much harm might result. He has no limit to the length of the course or to the number of injections, but is guided solely by the condition of the patient himself. A number of outside factors call for a temporary suspension of treatment, such as acute coryza, indigestion, menstruation and various indispositions. After such suspension of the injection, the treatment should be recommenced as if a tuberculin reaction had taken place. In all such cases the dose should be lowered.

Tuberculous invalids may be divided into three classes from the standpoint of tuberculin treatment: (1) The incipient class which offers the best results; (2) the patients who run a maximum temperature of 99 to 100, in whom excellent results can be obtained by careful tuberculin therapy; (3) the febrile class in which the temperature curve reaches 100 to 103 or over and in which Peters believes tuberculin to be contra-indicated. Later, by routine treatment a number of these patients may be made tuberculin subjects.

72. **Etiology of Pellagra.**—In addition to the colon group of bacteria found in feces of pellagrins, Page has for many months noticed a bacillus which he suggests may be the cause of pellagra. This bacillus is much longer and more sharpened at the ends than those of the colon group. It is motile, aerobic, sporogenous, stains readily, and grows on culture medium. Animal inoculation experiments have not been very successful. Mild intestinal affection was produced in a cat and the bacillus was again observed on microscopic examination. In a man pellagra has been induced by transference of cultures of the bacilli. Pharyngitis and bronchitis developed within three days and were soon followed by definite intestinal and nervous symptoms of pellagra. The microscope revealed the organism in its many forms. Of fifty-three cases of pellagra examined, the bacilli were seen in great numbers. Seventeen of these have been examined many times and the organism was present in every instance for many months. The organism has not been seen on examination of healthy individuals and those suffering from other diseases.

The bacillus in culture has been tested by many drugs. A 1 per cent. solution of ichthyol seemed to have a most decided effect. Page has partially tested this drug in fifteen cases of pellagra within the last six weeks. Doses of two 5-grain pills three times a day for eight or ten days apparently cure the average case. In two instances he has known 80 grains of the drug to relieve all digestive and nervous symptoms. The more advanced cases require longer treatment. With the symptoms, the bacilli disappear.

77. **Significance of Von Pirquet Test.**—A positive cutaneous reaction Frazer states is less frequent in children than it was once thought to be, the high percentage of reactions obtained being due to the application of the test chiefly to infected children of the poorer classes and therefore a positive reaction is of greater significance than it is commonly supposed to be. While there is an increasing percentage of reactions with years, and a corresponding decrease in the value of the reaction, the view usually held that the reaction has significance only during the first two or three years of life is not borne out by recent figures and we should be suspicious of a reaction occurring up to the age of 10. Frazer urges that annual tests be instituted in the effort to detect early infection, and that, bearing in mind the fact that many if not most cases of clinical tuberculosis in later years are due to renewed activity of old foci, we should seek by proper means to prevent the development of "infection" into "disease." A negative reaction, negative on repetition of the test, is valuable evidence of the absence of tuberculosis unless the child be suffering with advanced or acute disease, especially measles.

Modern Hospital, St. Louis

January, IV, No. 1, pp. 1-72

82 New Samaritan Hospital of Troy, N. Y. J. O. Post and S. S. Goldwater, New York.
83 Hospital Roentgen Ray Laboratory—Its Place in Hospital. I. S. Hirsch, New York.
84 Feeding the Hospital—Food. L. Graves, Cleveland.
85 Hospital Superintendent—Past, Present and Future. W. H. Walsh, Philadelphia.
86 Safety from Fire to Helpless in Hospitals. H. F. J. Porter, New York.
87 Raising Funds and Financing Small Hospital. N. B. Jordan, Aurora, Ill.
88 Twilight Sleep—Right Way and Wrong Way. W. H. Knipe, New York.
89 Systematic Ambulance Service for Metropolitan Hospitals. N. Maul, New York.

New Jersey State Medical Society Journal, Orange

January, XII, No. 1, pp. 1-52

90 Mosquito Extermination in Essex County. R. H. Hunt, East Orange.
91 Gonorrhea: Complement Fixation Test as Aid in Diagnosis. L. L. Davidson, Newark.
92 Chronic Gonorrhea of Cervix Uteri. C. L. De Meritt, Hoboken.
93 Side-Lights on Twilight Sleep of Gauss. N. G. Price, Newark.
94 Control of Cancer. E. J. Ill, Newark.

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New York Medical Journal

January 23, CI, No. 4, pp. 141-184

95 History of Medical Ethics. G. W. Cook, Washington, D. C.
96 *How Shall We Know When Gonorrhea in Male is Cured? A. L. Wolbarst, New York.
97 Early Diagnosis and Operation for Gall-Stones. G. Torrance, Birmingham, Ala.
98 Physical Examination of Employees of Department of Health of City of New York. C. B. Slade, New York.
99 Hemorrhoids and Hyperchlorhydria. E. Palier, New York.
100 Untrustworthy Galenicals. H. Beates, Jr., Philadelphia.
101 Laplace Operation. J. J. Gilbride, Philadelphia.
102 Modern Treatment of Sciatica. H. Climenko, New York.
103 Subacromial Bursitis. S. O. Fields, Newport News, Va.

96. **How Shall We Know When Gonorrhea in Male is Cured?**—Wolbarst states that no patient can be declared cured of gonorrhea unless the following tests have been carefully and repeatedly performed: 1. Microscopic and cultural examination of the centrifugalized morning urine, as well as the washings from the irrigation of the anterior urethra. 2. Microscopic and cultural examination of the urethral discharge—whether spontaneous or artificial. 3. Microscopic and cultural examination of the massaged secretion of the prostate and seminal vesicles. 4. Urethroscopic examination of the anterior and posterior urethra. 5. Complement fixation test. 6. Skin reaction and hypodermic injection with gonococcus vaccine (still *sub judice*). Should all of these tests prove negative repeatedly, the patient may be declared cured; but the physician cannot assume the full responsibility and guarantee the cure. The patient himself must assume that responsibility.

Northwest Medicine, Seattle, Wash.

January, VII, No. 1, pp. 1-34

104 Cerebrospinal Fluid as an Aid to Diagnosis of Obscure Cases of Syphilis of Central Nervous System. L. Selling, Portland, Ore.
105 Case of Syphilis of Internal and Middle Ear. E. E. Maxey, Boise, Ida.
106 Early Diagnosis and Treatment of Gall-Stones. G. F. Koehler, Portland, Ore.
107 Mucous Glands of Gall-Bladder. J. E. Else, Portland, Ore.
108 Modern Medicine and Its Social Responsibilities. F. R. Green, Chicago.
109 State Industrial Insurance in Washington. H. E. Allen, Seattle.

Southern Medical Journal, Mobile

January, VIII, No. 1, pp. 1-80

110 Old Time Physician. C. T. Grayson, Washington, D. C.
111 Some Medical Aspects of Negro. R. Wilson, Jr., Charleston, S. C.
112 *Public Health. R. M. Cunningham, Birmingham.
113 *Health—National Asset. J. H. Florence, Houston, Tex.
114 Effect of Habitual Use of Tobacco. R. L. White, Clayton.
115 Non-Technic Differentiation of Cardiac Arrhythmias. W. M. Barton, Washington, D. C.
116 *Defective Metabolism and Its Results. J. G. Palmer, Opelika.
117 Pellagra in Children. Report of Cases in Montgomery, Ala. G. J. Greil, Montgomery, Ala.
118 *Observations Further Incriminating Sugar-Cane Products as Main Cause of Pellagra in South. R. Blosser, Atlanta, Ga.
119 Case of Sarcoma of Kidney. J. M. Proctor, Hot Springs, Ark.
120 Case of Primary Typhoid Meningitis. J. E. Robinson, Temple, Tex.
121 Case of Syphilitic Pyloric Stenosis. T. B. Hubbard, Montgomery.
122 *Splenectomy with Some Unusual Pathologic Findings. P. C. Perry, Jacksonville, Fla.
123 Use of Clamps in Resection of Bladder. Report of Case. C. W. Allen, New Orleans.
124 Indirect Transfusion of Blood. J. H. Gibbes, Columbia, S. C.
125 Syphilis and Wassermann Reaction. C. W. Shropshire and C. Watterston, Birmingham.
126 Reduction of Preventable Disasters in Ear, Nose and Throat Surgery. H. Dupuy, New Orleans.
127 *Tonsillectomy During Acute Endocarditis. Report of Cases. W. G. Harrison, Birmingham.
128 Opportunities for Medical Work in England, Ireland and Scotland. C. J. McGee, Knoxville, Tenn.

112. Abstracted in THE JOURNAL, Dec. 12, 1914, p. 2159.

113. **Health—National Asset.**—Florence summarizes his paper as follows: Educate the people, beginning in the school and in the homes. Agitate health matters in season and out of season. Rely on the press for aid. Get in close touch with your law-makers that they may act with foresight and intelligence. Organized medicine must, as never before, be up and doing. There should be medical men to lecture at each farmers' institute or congress, also at the meeting of civic leagues, woman's clubs and commercial bodies; in fact, on every occasion possible let education and publicity be the keynote. There is no reason why the gospel of health should not be preached from every pulpit in the United States. Inform corporations of the money value of preserving health and life. Instruct each individual what sickness means in dollars and cents to each and every household. Be alive to the issues; extend your endeavors to the end that the citizenship of our great commonwealth may be a happy, healthful, home-loving and God-fearing people.

116. **Defective Metabolism and Its Results.**—Palmer feels himself justified in considering auto-intoxication as being the primary cause of all cases of rheumatism, Bright's disease, arteriosclerosis, apoplexy, cholangitis, pancreatitis, cardiac disease, many exanthemata, gastric ulcer and even cancer of the stomach as well as many other troubles with which we have to deal, to defective metabolism and the resulting auto-intoxication. The physical and mental degeneracy resulting from toxemia, he says, can and does bring about a physical degeneracy that is transmissible and many children are the victims of hereditary, degeneracy, the sins of the parent being handed down even unto the third and fourth generation. There is no work of the physician demanding more earnest thought, or no labor that we can perform for the public that will bring greater returns than to teach the individual the importance of how to eat and what to eat, what to drink, and how to live so as to protect himself against organic failures.

118. **Sugar-Cane Products as Cause of Pellagra.**—The following facts in Blosser's opinion seem to support his claim that sugar-cane products are causing at least a large majority of the cases of pellagra in the South. All but three of the 133 pellagrins whom he has questioned admit having eaten sugar-cane products very freely. Exclusion of all partially refined sugars and sugar-cane syrups from the diet of pellagrins has enabled him to cure 121 out of 133 patients treated; of the remaining 12, 8 were improved and 4 died, a mortality of 3 per cent. Recurrences have not occurred in any cases in which the diet was carried out as directed; slight recurrences developed in five cases, but in each of these it was found that the patients had previously relapsed into their former diet.

The presence in sugar-cane products of an actively poisonous substance is shown by a feeding experiment reported by Blosser a short time ago. A moderate amount of sugar-cane syrup was administered to a dog, together with a diet which was in other respects varied and well balanced; at the end of six months the dog was found to have developed pronounced organic changes of the liver, intestines and kidneys. These conditions could not have been due to an unbalanced diet or to the absence of "vitamines." The organs affected in this feeding experiment are the ones mainly affected in pellagra.

122. **Splenectomy.**—There are many points of interest in Perry's case. First, following a child-birth, in December, 1913, and the patient's admission to the hospital, in January, 1914, suffering from acute empyema of the gall-bladder, associated with stone, her uneventful recovery from this condition, followed by a period of apparent good health; her readmission to the hospital in August, 1914, with chills and fever, and a mass in the abdomen. Repeated blood examinations failed to reveal the presence of malarial parasites in the peripheral circulation, but by cystoscopic examination it was determined that she had a dead kidney on the left side. A nephrectomy was done, but the condition failing to improve under careful medical treatment, with a persistence of chills and a rise of temperature at irregular intervals, which could not be explained, finally led to a splenectomy, with fatal results.

127. **Tonsillectomy During Acute Endocarditis.**—Harrison believes that it is often wiser to perform tonsillectomy during an acute attack of endocarditis and remove the source of infection than delay with the hope of operating after the acute attack has subsided. One can sometimes cleanse the tonsil crypts by local applications and syringing with anti-

septic solutions, but in spite of the most assiduous care it will sometimes be impossible to find every focus. As to vaccines, Harrison believes that cultures should be made from the tonsil in all cases of joint or heart involvement and properly preserved, from which vaccines could be made and the patient properly treated with these in cases in which the fever and other signs of infection do not disappear within a reasonable time after the operation.

Tennessee State Medical Association, Nashville

December, VII, No. 8, pp. 315-356

129 Treatment of Trachoma in Its Several Stages. G. C. Savage, Nashville.
130 *Gall-Bladder Disease. J. H. Carter, Memphis.
131 Some Advances in Roentgen Ray Therapy. W. S. Lawrence, Memphis.
132 Tic Douloureux. W. St. John, Bristol.
133 Chronic Duodenal Ulcer. J. P. Tillery, Knoxville.
134 Some Needed Medical Legislation in Tennessee. S. W. Woodyard, Greenville.
135 Pellagra. J. J. Waller, Oliver Springs.

January, No. 9, pp. 357-402

136 Social Cankers. O. J. Porter, Columbia.
137 Two Cases. J. F. Gallagher, Nashville.
138 Sterilization. S. M. Miller, Knoxville.
139 Practical Consideration of Tracheobronchoscopy. H. Ezell, Nashville.
140 Abdominal Surgery. L. L. Sheddan, Knoxville.
141 Diagnosis of Early Pulmonary Tuberculosis. E. M. Fuqua, Nashville.
142 Indications for Removal of Faucial Tonsils. A. B. Dancey, Jackson.
143 To a Graduating Class. B. B. Cates, Knoxville.
144 Hyperthyroidism—Its Etiology, Symptomatology and Treatment. J. B. Haskins, Chattanooga.

130. Abstracted in THE JOURNAL, May 16, 1914, p. 1583.

Washington Medical Annals

January, XIV, No. 1, pp. 1-55

145 School Clinics. G. H. Heitmuller, Washington, D. C.
146 Chronic Gonorrhea. Report of Case. A. Kemble, Washington, D. C.
147 Roentgenographic Gastro-Intestinal Diagnosis. J. R. Verbrycke, Jr., Washington, D. C.
148 Myiasis of Urinary Passages. E. F. King, Washington, D. C.
149 *Unusual Case of Anaphylaxis Following Administration of Tetanus Antitoxin. D. G. Smith, Washington, D. C.
150 Experience at Vera Cruz. G. T. Vaughan, Washington, D. C.
151 Experiences with Marine Expeditionary Force in Mexico. R. M. Little, U. S. Navy.
152 Persistent Glycosuria Symptom of Functional Liver Failure from Focal Infection. E. F. King, Washington, D. C.

149. **Anaphylaxis Following Administration of Tetanus Antitoxin.**—The unusual features of Smith's case were: 1. The length of time elapsing between the injection of the antitoxin and the onset of anaphylactic symptoms, which was nine days. 2. The eruption, which was of a dual type, lasting four days. 3. The edema of the face, lasting six days. The edema put in its appearance promptly after the eruption had vanished. Although in the morning it was hardly discernible, in the afternoon the face was so puffed as to be startling in appearance; the eyelids being so edematous that they were opened with difficulty. 4. The joint infection, accompanied by fever, pain, swelling, prostration and delirium, lasting a week, making a total of twenty-seven days after injection. The series of symptoms started in nine days after the time of injection and lasted until the twenty-seventh. The treatment employed was eliminative and symptomatic. The bowels and kidneys were kept active and the patient kept in bed when necessary, and the pain, pruritus and fever met by appropriate measures. The patient is now in good health.

West Virginia Medical Journal, Wheeling

January, IX, No. 7, pp. 217-254

153 Abderhalden's Serodiagnosis of Pregnancy and Its Practical Application. A. V. Weinberger, Wheeling.
154 Epidemic Cerebrospinal Meningitis. B. B. Wheeler, McKendree.
155 Acute Tubotympanic Catarrh. J. M. Sites, Martinsburg.
156 Purity of Our Streams Should Be Preserved. S. G. Highland, Clarksburg.
157 General Subcutaneous Emphysema. Report of Case. H. W. Daniels, Elkins.
158 Diagnosis and Treatment of Meningitis. S. L. Cherry, Clarksburg.
159 View Point Sanatorium for Tuberculosis. T. Gillespy, Wheeling.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

January, XIX, No. 8, pp. 275-306

1 Some Experiments with Roentgen Ray Filters. J. H. Sequeira.
2 Positive Diagnosis of Duodenal Ulcer. A. E. Barclay.
3 Diathermy—Its Production and Use in Medicine and Surgery. E. P. Cumberbatch.
4 Accurate Localization of Foreign Bodies in Tissues by Roentgen Rays. A. J. Cleveland.

British Medical Journal, London

January 9, I, No. 2819, pp. 57-100

5 Cases of Nerve Concussion Due to Bullet and Shell Wounds. A. H. Tubby.
6 *Treatment of Infantile Paralysis. W. MacKenzie.
7 Field Hospital in Belgium. J. H. Beavis and H. S. Souttar.
8 Anomalous Case of Enteric Fever in an Inoculated Subject. E. A. Bourke and S. Rowland.
9 *Appendicitis Treated with Anticolon Bacillus Serum and Vaccine. A. C. Guthrie.
10 Warble-Fly Hypoderma. A. E. Shipley.
11 Medical Work in Early Seventies in County Infirmary in Ulster. G. St. George.

6. **Treatment of Infantile Paralysis.**—The treatment for any paralyzed muscle is immediate and anatomic rest. A muscle is rested only when it is placed in a position in which its work is zero and its origin and insertion are as nearly as possible on the same horizontal plane, for the resumption of function, which should be gradual, is always easiest along a straight line. The zero position is the position of anatomic rest in which the individual muscle itself is relaxed and both its own action and that of its opponent prevented.

MacKenzie's practice when reeducating a muscle is to begin each day at zero and gradually work up to and beyond the highest point achieved the day before. If, for example, the knee be contracted owing to a paralyzed quadriceps and overacting flexors, it is obvious that the former being at a disadvantage for functionating, equilibrium has been destroyed. Hence place the quadriceps in a position of relaxation (knee extension), prevent the overaction of its opponent when resting by means of a splint, or when exercising by means of position, then daily work at it to restore the lost equilibrium, by recognizing that it is incorrect to flex the knee beyond the point from which extension is possible—that is, at which effort becomes manifest—thus recognizing the cessation of its opposition to its opponent flexor. Reeducation of the "paralyzed" muscle. No definite time can be stated when reeducation should begin, but the two guides would be the temperature and pain; until the cessation of these, the limbs are best rested as advised, and rested only. The difficult question then arises, to find some work the muscles can actually do; and although such work may be the minimum for a healthy muscle, it may be the maximum for the affected muscle. It is not a question of paralysis of muscle, but the loss of certain functions of the muscle, and it is to obtaining the resumption of these that our energies are directed. MacKenzie also discusses fully the surgical treatment of this condition.

9. **Appendicitis Treated with Anticolon Bacillus Serum and Vaccine.**—The possibility of appendicitis being due in some measure to infection of *B. coli communis* suggested to Guthrie that the serum and vaccine of the colon bacillus might be of service in this affection. He has tried it with success in no fewer than twenty-two cases. Most of the cases were in the acute stage; a few showed symptoms of chronic appendicitis, and in one the symptoms were of a postoperative character—that is, there was pain in the region of the cecum simulating appendicitis two years after the appendix had been removed. In only one case has there been a recurrence; here, too, little serum was used and no vaccine. What struck Guthrie most was the wonderful effect of the serum in causing complete relief from pain, also the feeling of well-being and hopefulness of recovery—a feeling entirely absent before treatment. It is therefore believed the serum should be used in the first stage, when the pain is general.

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The most suitable dose is 20 c.c. anticolon bacillus serum; 10 c.c. should be injected subcutaneously first in the right and then in the left hypochondriac region. A few days later 100 million colon bacillus vaccine should be injected in a similar way into the deltoid region. This is to prevent recurrence. As organisms other than the *B. coli communis* may be the determining cause of this disease, the "fixation of complete test" should be tried, using the patient's serum and the most probable organism (*B. coli communis, Pneumococcus*, streptococcus), a corresponding serum or vaccine being used. The anticolon bacillus serum probably acts chiefly as an antitoxin, also as a counterirritant, causing local leukocytosis. It has also probably a physical effect, changing the equilibrium in the surrounding fluids and thereby producing increased osmotic pressure and favoring phagocytosis of the bacilli.

Edinburgh Medical Journal

January, XIV, No. 1, pp. 1-80

12 Case of Carcinoma of Pylorus, Old Obstruction in Left Coronary Artery, with Organized Infarct of Heart Wall and Aneurysm Formation. Recent Pulmonary Thrombosis. A. M. Drennan.
13 *Local Incidence of Cancer in France in Relation to Fuel. C. E. Green.
14 Sanatorium Treatment in Pulmonary Tuberculosis and Its Results. J. Guy.
15 Two Cases of Otitic Extradural Abscess. J. S. Fraser.
16 Case of Generalized Vaccinia. R. C. Low.

13. **Local Incidence of Cancer in Relation to Fuel.**—A very careful inquiry was made by Green as to the relation to cancer of coal, charcoal and wood in France. In nearly all the town districts of France coal is largely used. Wherever coal is exclusively burned the death rate is invariably very high, as is the case also in which charcoal is burned. The fact that charcoal seems to be as dangerous as coal is not surprising, when it is borne in mind that in the Kangri basket, which undoubtedly causes malignant tumors in the natives of Kashmir, the fuel used is charcoal. On the other hand, in cases in which wood is burned exclusively, the death rate is very low. The country death rate is even more striking. In the north the death rate in the country districts almost approximates that of the town. In certain of these districts the country death rate is actually higher than the town. The explanation of this is, to Green's mind, the simple one that cases in which coal is burned, as it often is in country districts, on hearths and in grates which were originally built to burn wood, the elimination of the products of combustion of the fuel is much less effective, and the results are correspondingly deleterious. In cases in which coal and wood are burned the death rate is about the average. In cases in which wood alone is burned the death rate is much below the average in some cases.

Green is convinced that the character of the fuel used in any particular district has a profound effect on the incidence of cancer. Cancer seems to be practically non-existent in some purely peat-burning districts in Scotland, whereas the death rate is almost invariably high wherever coal is burned. It is very prevalent in certain districts in Orkney in cases in which nothing but peat was burned, but this peat contains nearly 1 per cent. of sulphur, and is coal-like in character. Some other element than the strictly sulphur content may be involved in the relationship of certain fuels to the cancer death rates of the districts in which they are used; some chemical condition of the fuel, its ash or its other products of combustion may be responsible, but the results of such inquiries as Green has made into the fuel conditions of those districts in which cancer is rife seem to point conclusively to the fact that etiology of malignant disease has some subtle connection with fuel and its products of combustion, a connection which lies somewhere about the difference between wood and charcoal.

Glasgow Medical Journal

January, LXXXIII, No. 1, pp. 1-79

17 *Leper Houses and Medieval Hospitals. C. A. Mercier.
18 Rejections Among Recruits. J. Fergus.

17. Also in *Lancet*. See THE JOURNAL, January 30, p. 471.

Lancet, London

January 9, I, No. 4767, pp. 59-114

19 *Communication Between Two Ventricles of Heart Occupying an Unusual Situation. T. W. Griffith.
20 Some Conditions that Simulate Chronic Appendicitis. J. Morley.
21 *Pneumoperitoneum Following Resection of Carcinomatous Rectum, Evacuation of Gas and of Pelvic Abscess. Recovery. J. D. Malcolm.
22 Osteoplastic Resection of Skull in Decompression Operations of Brain. S. Mort.
23 Third Outbreak of Epidemic Poliomyelitis at West Kirby. G. Jubb.
24 Arteriovenous Aneurysm of Femoral Vessels, Following Bullet Wound Through Left Thigh. W. M. Willis.
25 *Value of Tuberculin as an Addition to Sanatorium Treatment. N. D. Bardswell.

19. **Communication Between Ventricles of Heart.**—The communication in Griffith's case was between the conus arteriosus or infundibular part of the right ventricle on the one hand and the aortic vestibule on the other. The heart was enlarged and weighed 19½ ounces.

21. **Pneumoperitoneum Following Resection of Carcinomatous Rectum.**—An ulcerated tumor in the posterior wall of the rectum was removed by a combined abdominal and peritoneal method. The bowel was divided above the new growth, and both ends were closed. The rectum, with as much pelvic fat as possible, was separated and everted through the anus. The projected mass was then cut off between the growth and the internal sphincter. The remaining part of the rectum was held in its everted position by forceps, and through it the lower end of the mobilized sigmoid flexure was brought down. This was opened, and the bowel ends were united by interrupted sutures and replaced in the pelvis. The union was considered so accurate that Mayo's recommendation to drain the pelvis through an incision behind the anus was not followed. After the operation the highest temperature was 100 F., the bowels acted, and no unfavorable sign was noticed until the sixth morning, when the abdomen was distended. The bowels never failed to move when laxative medicine was given, and there was no vomiting, but the distention rapidly increased, and on the ninth day it was very great, the abdomen being tense and tympanitic all over and the pelvic floor being pushed down. The temperature was 99.2, the pulse rate was increasing, but only 118 and of fair volume. Respiration was not greatly distressed, and the general condition was alarming only because of the increasing distention.

The abdomen was reopened and its anterior wall immediately fell with a flop on the intestines, which occupied a small space. A large quantity of gas escaped, and an absence of odor was observed. The exposed part of the peritoneal sac contained no fluid, and its serous surface was very pale and showed no sign of inflammation. The intestines were not adherent except in the pelvis, in which all the parts were matted together. On separating these many ounces of offensive pus were released. The abscess cavity, which contained no free gas, was drained through the lower end of the incision, the remaining part of which healed by first intention, and no further accumulation of gas took place. After drainage of a secondary collection of pus through an incision in the right groin the abscess healed slowly and otherwise recovery was uninterrupted.

25. **Tuberculin in Treatment of Tuberculosis.**—From October, 1911, to May, 1913, tuberculin was given to 154 patients at King Edward VII sanatorium by Bardswell. One hundred and thirty had tubercle bacilli in their sputum; the remaining twenty-four patients had not. The results among the patients showing bacilli were as follows: Much improved, 64.6 per cent.; improved, 17.7 per cent.; stationary or worse, 17.7 per cent.; lost bacilli, 32.3 per cent. While the use of tuberculin has had no appreciable effect on the general results, as regards the loss of bacilli Bardswell says there has been an appreciable difference, 5 per cent. more patients having been discharged free from bacilli than in former years. The greatest improvement is seen in the group of moderately advanced cases, the figures for loss of bacilli having risen from 17.8 to 25.6 per cent. a significant increase, since this group includes the majority of the patients.

Practitioner, London

January, XCIV, No. 1, pp. 1-178

26 Theory of Internal Secretion: Its History and Development. E. Gley.
27 Physiology of Thyroid. H. H. Dale.
28 Thyroid Insufficiency. E. Hertoghe.
29 Endemic Goiter. R. McCarrison.
30 Exophthalmic Goiter. L. Williams.
31 Parathyroid Glands. A. F. Hertz.
32 Physiology of Chromaffin. D. N. Paton.
33 Suprarenal Glands. T. R. Elliott.
34 Pluriglandular Insufficiency: Its Incidence and Treatment. H. R. Harrower.
35 Functions of Pituitary Body. S. Vincent.

Sei-I-Kwai Medical Journal, Tokyo

December, XXXIII, No. 12, pp. 73-81

36 *Abortive Treatment of Typhoid and Paratyphoid. S. Ichikawa.

36. **Abortive Treatment of Typhoid and Paratyphoid.**—Ichikawa obtained remarkably good results with the intravenous injection of typhoid vaccine in eighty-seven cases of typhoid and paratyphoid. The vaccine was manufactured as follows: Ten platinum wire loops of a young culture of typhoid bacillus is mixed with 10 c.c. of serum from a few typhoid patients who are in the convalescent stage. It is kept in the incubator for five to six hours. Then it is centrifugalized and the bacilli are dissolved after washing three times in 100 c.c. of physiologic salt solution which contains 0.3 per cent. of phenol shaken thoroughly for one hour. Heating is to be avoided. The vaccine is well shaken before it is used, and then about 0.5 c.c., diluted with warm physiologic salt solution, is slowly injected into the median basilic vein, taking about two minutes.

Intestinal hemorrhage as an irritative symptom was noted in a few cases one to three days after the injection. However, the frequency of the intestinal hemorrhage was less than in those patients who did not receive the injection, and the hemorrhage was in most cases less in quantity. In two patients who had had intestinal hemorrhage previously, further hemorrhage was not observed. Beside the intestinal hemorrhage, Ichikawa observed two cases of hemoptysis, one case of epistaxis and two cases of cutaneous hemorrhage; all the hemorrhages were quite slight and never recurred. He claims that typhoid and paratyphoid can be abortively cured by intravenous injection of vaccine made by sensitizing the living typhoid bacillus with the serum of typhoid patients in the convalescent stage.

Bulletin de l'Académie de Médecine, Paris

December 22, LXXII, No. 41, pp. 417-431

37 Colloidal Gold in Intravenous Treatment of Typhoid; Forty-Two Cases. M. Letulle.

Presse Médicale, Paris

December 3, XXII, No. 78, pp. 705-720

38 *Typhoid and Paratyphoid Fever; Prophylaxis and Treatment. L. Landouzy.
39 *Morphin as Obstetric Analgesic. G. Bertrand.
40 Localization of Projectiles in the Tissues. (Repéreur Marion-Danion.) G. Marion.
41 Salvarsan Intravenously in Treatment of Gangrenous Wounds. P. Ravaut.
42 *Preventive Treatment of Tetanus by Early and Thorough Sterilization. Chaput.

December 10, No. 79, pp. 721-728

43 *Importance of Early Treatment of Paroxysmal Tachycardia. H. Godlewski.
44 The Arrangements for Care of the Wounded at the Front. (Trois mois de campagne. Service de santé de l'avant.) G. H. Lemoine.
45 *Epinephrin in Treatment of Cholera. Naamé.

December 17, No. 80, pp. 729-740

46 *Antityphoid Vaccination of the Public. (Vaccinations publiques contre la fièvre typhoide.) G. Maurange.

38. **Typhoid and Paratyphoid Fever Among the Troops.**—Landouzy remarks that the dread of the appearance of typhoid among the French troops proved only too well founded as a whole series of *endémies typhisanies*, as he calls them, developed along the eastern and northern line before the decree rendering vaccination against typhoid compulsory in the French army went into effect October 1. But the paratyphoid bacilli B. were found in the blood instead of typhoid bacilli in about a sixth or eighth of the cases or even oftener. In certain corps the infections numbered about the same for each, and in one corps out of twenty-five specimens of blood all but three developed cultures of the paratyphoid B. bacillus. He describes the clinical pictures of this infection and of "trench diarrhea" in general. It may induce a syndrome deceptively like true typhoid and very serious, or a subacute jaundice, or a syndrome suggesting dysentery or cholera or acute poisoning—all these may be induced by the paratyphoid bacillus. Treatment of both typhoid and paratyphoid can be only symptomatic, with special care to keep the heart working well. He reiterates that keeping the mouth and skin clean, changing the linen in a typhoid ward, etc., require more constant attention and devoted expert service than a ward full of wounded, while all entering the ward are exposed to greater dangers. After recovery, the heart, the liver, the kidney, the spine or the brain may be left irreparably damaged, so that persons contracting typhoid, paratyphoid or other infection in war may be left internally crippled as much as the lame, the halt and the blind cripples from external wounds.

Landouzy adds that when persons inoculated against typhoid develop what seems to be typhoid later, it will almost inevitably be found to be of paratyphoid origin. He encountered recently a case of this kind in a nurse who had been vaccinated against typhoid. Paratyphoid bacilli were cultivated from her blood when she was taken sick later with what seemed to be true typhoid. Landouzy urges therefore parallel vaccination against paratyphoid infection as the only means to stamp out the endemo-epidemic that has swooped down on the army at the front. The troops in the trenches are peculiarly exposed to these infections on account of the proximity of dejecta and the frequently polluted drinking water, to say nothing of the exhaustion from privations of all kinds.

39. **Morphin in Obstetrics.**—See editorial in THE JOURNAL, Dec. 19, 1914, p. 2233.

42. **Preventive Treatment of Tetanus.**—Chaput concludes from what he has observed in the numerous cases of tetanus he has encountered that the tetanus germ develops most readily in compact connective tissue and aponeurosis tissue, especially when gangrene is setting in; also in regions with numerous nerves as the nerve sheath is likewise a compact connective tissue. These conditions are realized most perfectly in the hand and the foot, and hence in the hands and feet, and in other regions with numerous nerves, the wounds require more thorough sterilization to ward off tetanus than injuries elsewhere. As gangrenous tissues offer a peculiarly favorable soil for tetanus germs, all such tissues should be carefully removed and all crushed tissues liable to become gangrenous. Most disinfectants have but a briefly transient action, but iodoform keeps generating iodin through days and weeks, and this is the main reliance in treating wounds liable to generate tetanus. The wound can be dusted thick with it and iodoformed wicks carried down in the depths. After forty-eight hours the mischief is done, as a rule. If iodoform is not tolerated, zinc peroxid or bismuth can be used instead.

43. **Paroxysmal Tachycardia.**—Godlewski emphasizes that when an attack of tachycardia can be arrested at once it does little harm, but if the heart is left to pound away its strength uselessly, it becomes exhausted and permanent damage may result. He has had two such cases in the last five weeks among the two hundred men in his company. After a fatiguing march on a hot day the men suddenly developed palpitations, the face red but not cyanotic, with distress in the precordial region and furious beating of the heart but no dyspnea. The beat was 140 and the pulse small. The men were given at once a chunk of bread, the size of a large nut, which they were told to swallow whole with a little water. The pulse dropped immediately to 78 and 70 and all disturbance was at an end. The cases were alike in every particular, as also the benefit from swallowing the chunk of bread a

few minutes after the onset of the attack. His explanation of the benefit from this simple measure is that the terminals of the pneumogastric nerve in the esophagus are irritated by the stretching of the esophagus as the large chunk of bread is swallowed whole, and this irritation seems to act on the whole pneumogastric system and modify its functioning so that it forgets to keep up the tachycardia phenomena, and conditions right themselves.

45. **Epinephrin in Cholera.**—Naamé shows by analysis of the symptoms of cholera that most if not all of them can be explained by an elective action on the suprarenals from the cholera toxins. There is a striking analogy between the cholera syndrome and the symptoms from defective functioning of the suprarenals. In short, he declares, cholera must be regarded as a *hypoépinéphrie toxinique* and the logical conclusion is to treat it with the suprarenal extract which the suprarenals are no longer able to produce for themselves. The first stage of cholera, the bacillary invasion, runs its course in the intestines and is comparatively harmless. As the toxins generated act on the suprarenals and paralyze them, the dangerous second phase develops. The remarkable tolerance of cholera patients for epinephrin proves, he says, that it supplies a much needed active principle. He injects it subcutaneously in doses of 4 or 6 mg. in the twenty-four hours, keeping it up for several days, supplemented by saline infusion. Owing to the injury from the much-damaged condition of the suprarenals, the body is unusually sensitive to poisonous substances and hence, he declares, cocain, morphin and similar drugs should never be given in cholera and the patient should not be taken away from the spot. Epinephrin has not only a symptomatic action, combating the vomiting, diarrhea, cramps, abnormally low blood-pressure and chilliness, but it acts directly on the primary cause, having a manifest action both on functioning and on the germs.

46. **Vaccination Against Typhoid at Paris.**—Maurange has been urging the people of Paris not to wait for an epidemic of typhoid but to allow prophylactic vaccination, the same as is now compulsory in the French army. The newly organized service of gratuitous vaccination has been visited now by 5,100 persons and 13,800 injections have been made. The office is open every day for registering, and eight questions are asked each applicant, present health, typhoid, scarlet fever, pleurisy at any time, recurring bronchitis or bowel trouble, and whether there is albuminuria at present. In case of doubt, the urine is examined and the lungs ausculted, and all suspects are advised to abstain from the antityphoid vaccination. The vaccinating office is open four times a week for two hours, and the applicant's numbered card is compared with the register and the record of the previous reactions. The reaction is slight and transient; only very rarely are there still traces of it next day.

Archiv für Verdauungs-Krankheiten, Berlin

December, XX, No. 6, pp. 617-732

47 *Tetany from Thickening of the Blood. (Zur Aetiologie der Tetanie.) G. Rosenfeld.
48 *Concrements in the Pancreas. (Zur Kenntnis der Lithiasis pancreatica.) M. Rosenthal.
49 *Esophagoscopy. (Neue Gesichtspunkte für die moderne ösophagoskopische Technik.) W. Sternberg.
50 *Causes of Chronic Constipation. (Zur Pathogenese der chronischen Obstipation.) F. W. Hopmann.
51 *Harmlessness of Putrefaction Proccsses in the Intestines. (Darmfäulnis.) A. Rodella.

47. **Etiology of Tetany.**—Rosenfeld reports a case in which tetany developed with the exactness of a laboratory experiment when the blood became much concentrated, and then subsided as fluids were supplied to dilute the blood. The patient was a man of 34 with cicatricial stenosis of the pylorus and all disturbances ceased after a gastro-enterostomy, but in the meanwhile the man had lost so much fluids from excessive vomiting that the intake of water by proctoclysis was not sufficient to dilute the blood, and the tetany came on. More fluid was then allowed to run into the rectum and the tetany subsided. The next day it was the intention to give intravenously 1.5 liter of 0.6 per cent. salt solution and by proctoclysis 50 gm. of sugar in the water in the irrigator. By mistake the sugar was dissolved in the salt solution and the whole infused into the vein. The tetany came on again as the infusion was in progress, but yielded anew to more copious intake of fluids. In this case there was no question of auto-intoxication from the stomach trouble and nothing to indicate deranged internal secretion. The loss of fluids in the excessive vomiting caused such inspissation of the blood that tetany resulted. The tetany subsided each time as the deficit in fluids was made up.

48. **Pancreas Lithiasis.**—Rosenthal comments on the rarity of concrements in the pancreas, only about seventy cases being known. At necropsy of a man of 21 who had succumbed to pulmonary tuberculosis, he found the pancreas packed with stones, five of them as large as a hazelnut. There had been no symptoms of diabetes in this case, which fact Rosenthal explains by the finding that most of the islands of Langerhans were apparently normal, enough having been left uninjured by the presence of the concrements to attend to their task in regard to carbohydrate metabolism. This explains why in nearly all the cases of pancreas lithiasis on record the discovery of the stones was an operative or necropsy surprise. In the thirty-two cases in the literature in which the age and sex were mentioned, twenty-six were males; the youngest patient was a boy under 10 and the oldest two men nearly 75. Obstruction of the outlet alone cannot be the cause of this form of lithiasis as otherwise it would occur more frequently in the many cases of obstruction, and it would be possible to reproduce the lithiasis in animals, which has never yet been accomplished.

49. **Improved Technic for Esophagoscopy.**—Sternberg gives an illustrated description of the instruments he uses for esophagoscopy, commenting on the advantages of a tube not longer than 18 to 25 cm. with an inner tube which can be pushed farther in.

50. **Various Causes of Chronic Constipation.**—Hopmann, in a series of twenty cases, investigated the mode of life, the diet, the drugs previously taken, the state of mind, preceding diseases, studying further the heart, the liver and stomach, and examining the rectum and sigmoid flexure by palpation and direct visual inspection, and classifying the cases according to the Roentgen-ray findings. In fourteen of the twenty cases the feces were found accumulated in the cecum and ascending colon after eighteen and twenty-four hours. They were finally voided in two or three days; first came a hard lump and then soft stool, all containing mucus. In four other cases the feces were not voided for from four to seven days and then they came as small hard lumps, without mucus admixture, but when a loosening diet and a mild purgative were given, the stools contained microscopic mucus. He cites these details as evidence that in every case there was some catarrhal trouble in the cecum or ascending colon and possibly also in the small intestine. The mucus admixture in the cecum and ascending colon may interfere with the normal process of absorption of fluids from the feces in this region. The symptoms with this type of "ascending constipation" are the same as with the syndrome ascribed to spastic contraction of the bowel, the so-called "spastic obstipation." It thus seems evident that this syndrome is in reality merely the result of catarrhal conditions in the cecum or small intestine or both.

In conclusion Hopmann reiterates that nothing in all the experiences related confirms the assumption of nervous influences as directly responsible for chronic constipation.

51. **Pathogenic Stools.**—Rodella's further experimental and clinical experience at his private sanatorium at Venice for derangement in the digestive system and metabolism has apparently confirmed anew his previous assertions in regard to the comparatively harmless nature of the products of intestinal putrefaction. Animals were injected with extracts of stool from young and old, the sick and the healthy. Stool from the febrile with intestinal affections always killed the animals inoculated with an extract of it, while other animals bore without the least apparent harm

injection of extracts from dyspeptic and diarrheic stool if it came from the afebrile. In all his experiments there was no correspondence between the extent of the putrefaction processes and the toxicity of the stool extract. Everything seemed to indicate that the putrefaction products are very little if at all pathogenic. Even 10 c.c. of putrid albumin could be injected subcutaneously in a rabbit with scarcely any disturbance, while the same amount of stool proved always toxic, and if 10 gm. of an extract of diarrheic stool was injected, the animal inevitably succumbed.

This method of injecting the animal directly with an extract of the fresh stool is much simpler and more instructive, he declares, than first isolating the bacteria and then injecting the animal with the bacteria. This direct-extract method has revealed that the stools of infants are far more toxic for laboratory animals than the stools of adults. Even in healthy children the extracts of their stools manifestly contain pathogenic bacteria in larger numbers and of greater virulence than in extracts of adults' stools. This throws light on the more serious consequences of intestinal derangement in children, as compared with adults, especially in acute infectious disease. As adults eat food that is generally cooked and thus sterilized, and as they practice hygiene of the mouth, very few micro-organisms, comparatively speaking, are swallowed, and these are mostly destroyed by the powerful digestive juices. Most of the bacteria which get into the bowel are of the putrefaction-producing group, and these have been found to be only slightly, if at all, pathogenic. In infants the digestive juices are weak and the infant intestine is more sensitive and develops catarrhal conditions more readily than the adult. The products of the catarrhal condition are liable to ferment and generate toxic substances that promote in turn the growth of pathogenic micro-organisms which under other conditions are crowded out by the saprophytes. By inoculation of animals with extract of the stools it is possible to discriminate between the pathologic and the non-pathologic cases and institute treatment accordingly. The inoculation of animals is liable further to reveal the presence of tubercle bacilli in the stools, which is a matter of great import for both treatment and for prevention of the spread of tuberculosis. He mixes 1 gm. of the stool with 5 c.c. of sterile water and injects the whole subcutaneously in a rabbit.

Beiträge zur klinischen Chirurgie, Tübingen

XCIII, No. 2, pp. 223-486. Last indexed Oct. 10, 1914, p. 1330

52 *Dog Healthy Six Years after Transplantation of Left Kidney into Inguinal Region and Right Nephrectomy. J. H. Zaaijer (Leiden).
53 *Multiple Polyps in the Stomach. (Polyposis ventriculi.) H. Heinz.
54 *Causes and Treatment of Prolapse of the Rectum. A. Ach.
55 Rupture of the Kidney from Contusion. (Subkutane Nierenrupturen.) A. Ach.
56 Operative Treatment of Movable Kidney. (Wanderniere.) A. Ach.
57 Technic for Operating on the Enlarged Thyroid. (Kropfoperation.) A. Ach. (Zur operativen Behandlung zweiseitiger Strumen.) W. Pettenkofer.
58 Spontaneous Subsidence of Traumatic Aneurysm in Axillary Artery. F. Genewein.
59 *Slitting the Sternum to Relieve Pressure on the Lower Air Passages. (Die dekompressive Thoraxsprengung durch longitudinale Sternotomie bei die Luftwege komprimierendem Aneurysma und Tumoren des Mediastinums.) P. L. Friedrich.
60 *Damage of Endothelium of Pleura at Operations and with Artificial Pneumothorax. H. Boit.
61 *Blocking the Brachial Plexus; 110 Cases. (Anesthesierung des Plexus brachialis nach Kulenkampff.) H. Boit.
62 Aneurysm of the External Carotid Artery Simulating Tumor in Tonsil Region. M. Jastram.
63 Influence of Resection of Phrenic Nerve on Experimental Pulmonary Tuberculosis. W. Carl.
64 *Acute Dilatation of the Stomach. (Akute atonische Magendilatation.) R. Linke.
65 Internal Hydrocephalus. W. E. Dandy and K. D. Blackfan (Baltimore).

52. **Transplanted Single Kidney.**—Zaaijer does not know of any other instance of six years of adequate kidney functioning by a transplanted single kidney. After the left kidney had been transplanted into the inguinal region, the renal vein sutured to the femoral and the renal artery to the femoral artery, the ureter implanted in the bladder, the urine for a time was blood stained. The plaster dressing was removed the eighteenth day as the wound had healed. Eighty-three days after the transplanting had been done the right kidney was removed through the back. This was in 1908, and the illustrations show the healthy dog six years later and the outlines of the kidney evident in its flank. It does not seem to have altered in size or consistency. The dog ran away once, but turned up again later, always in good health and spirits.

Zaaijer calls special attention to the technic with which he implanted the ureter in the bladder, as the six years of successful function confirm its value. The ligated ureter stump is fastened loosely to the bladder with three stitches which do not include the mucosa. The threads are left loose and the stump of the ureter is carried into the bladder, held in small artery forceps, through a minute incision in the bladder wall. The forceps are pushed in until they cause the opposite wall to protrude. A minute incision is made here and the stump of the ureter is pulled through by the ends of the thread with which it had been ligated. Then the threads fastening the ureter to the first bladder wall are tied. The outer stump of the ureter where it projects from the opposite wall is cut off just inside of the ligature, and the purse-string suture, previously taken around the incision, is drawn up as the outer stump, no longer held by the ligature threads, slides back inside the bladder. Zaaijer has applied this technic in sixteen rabbits also, confirming the advantages of this method. The ureter thus is not opened until the last moment.

53. **Polypous Proliferation of Stomach Mucosa.**—Heinz' patient is a man of 35, healthy until 1909 when he began to experience sensations of oppression in the stomach region, and nausea. The symptoms came on four or six hours after meals and subsided after eating. The Roentgen rays showed polyposis confirmed by an operation, at which several of the polyps were excised. In 53 cases of polyposis of the intestines on record, as compiled by Versé, the stomach was involved likewise in 5 but in none of the cases was the stomach the exclusive seat of the polyposis. Heinz has found a very few cases of this in the literature. The pylorus region is the one generally involved, and the patients are nearly always comparatively young. In the elderly the polyposis is usually accompanied with cancer. Heinz' patient was at first freed from disturbances and gained in weight, but the anemia is still so pronounced that the assumption of polyposis in the intestines or malignant disease seems justified at present.

54. **Prolapse of the Rectum.**—Ach discusses the various factors involved in production of prolapse of the rectum, especially the tendency to paresis of the rectal walls common in lean men subject to obstinate constipation or who have passed through typhoid or dysentery. Women also are particularly liable to prolapse of the rectum during repeated pregnancies or the menopause when there is a general tendency to hernia. In children, chronic catarrhal bowel trouble induces a predisposition by weakening the rectal walls, as also by the excessive straining at stool. Prolapse of the rectum is in reality first a hernia of the floor of the pelvis into the rectum. Treatment should be based on this pathogenesis. The simpler methods might be tried first, especially for children, massage, paraffin, or Thiersch's silver wire method. The various operative technics are described and compared, and Ach then illustrates a method he has applied in two cases with excellent outcome. The rectum is brought into normal shape by a strip taken from the fascia lata. The strip is 25 cm. long and 8 cm. wide and one end is slit about a third of the length of the strip. One of the slit ends is brought nearly around the rectum, to which it is sutured. The other end is sutured to the other side of the rectum and to the upper half of the vagina. The broad end of the strip is then drawn up as high as possible and fastened to Cooper's ligament.

59. **Decompression Slitting of the Sternum.**—Friedrich not only divided the sternum its entire length, but cut out the bone each side of the slit. The first patient thus treated

had an aneurysm of the innominate artery and the relief from the lengthwise opening made in the sternum was astonishing, but the patient, a man of 47, succumbed to pre-existing pneumonia. In a boy of 12 and a girl of 16 with a large tumor in the mediastinum, slitting the sternum in this way relieved the severe symptoms and permitted partial removal of the tumor. A gap of 3 cm. was left in each case, and there was no further cyanosis or dyspnea, not even as the tumor in one case continued to grow. Both patients have been treated since with Roentgen exposures and the tumors have materially retrogressed and the general health improved. In another case the thorax wall had lost so much of its elasticity in the man of 57 that merely slitting the sternum failed to relieve, and the bone on each side had to be cut away to leave a gap wide enough to be of any benefit. The tumor was a sarcoma.

60. **Damage to the Pleura with Operations and Artificial Pneumothorax.**—Boit emphasizes the importance of the phagocytosis and the bacteria-destroying properties of the endothelium of the pleura. When this is damaged in operations or by injection of a gas, the organism thus loses an important means of defense.

61. **Blocking the Brachial Plexus.**—Boit has applied Kulenkampff's technic over 200 times on patients ranging from 6 to 77 years of age. There is no doubt the injection of 10 or 20 c.c. of the 2 per cent. solution of the anesthetic for the purpose causes toxic or traumatic injury of the plexus, although it may be minimal. If the nerve is already pathologic, the effect is naturally felt more than by a healthy nerve. In his own 110 cases there were two failures requiring general anesthesia. He applied this method for all operations on the arms and found it particularly advantageous for reducing fractures and dislocations. The muscles of the arms become relaxed under it, as is observed otherwise only under deep general anesthesia. The phrenic nerve on the same side is temporarily paralyzed by the procedure, as can be seen by roentgenoscopy, but he never observed any tendency to dyspnea except in three instances. The conditions in these cases seemed to indicate that the phrenic nerve had been directly injured by the needle in seeking the plexus. The needle should never be introduced nearer to the median line than the first rib.

64. **Acute Dilatation of the Stomach.**—Linke analyzes 173 cases he has found in the literature, out of 200 on record. Only 78 of the 173 patients recovered, including 57 of the 105 postoperative cases and only 21 of the 68 non-operative, in which emaciation, mental disease or cachexia was evidently a factor. The atony and dilatation are functional, paresis of the gastric musculature being the cause of the acute dilatation. He describes 3 cases personally observed. The sudden explosive vomiting, collapse and enormous dilatation of the stomach proved fatal in 2 of the 3 cases, notwithstanding free use of the stomach tube. One patient had advanced heart disease, and conditions found at necropsy in the other suggest that placing the patient prone or in the knee-elbow position might have brought relief, as it did in the third case, in which it evidently helped to save the patient. This makes the twenty-eighth case on record, he says, in which turning the patient face down seemed to correct conditions at once. Prophylaxis is the main thing, Linke remarks, in conclusion, and the bearing in mind of the possibility of this contingency so that the diagnosis may not come too late.

Berliner klinische Wochenschrift

December 21, LI, No. 51, pp. 1929-1952

66 Wounds of the Nervous System. (Die Kriegsverletzungen des Nervensystems.) M. Lewandowsky.
67 Deviation of Complement in Syphilitic Serum. (Zur Bewertung der hämolytischen und hämolyschemmenden Funktion syphilitischer Sera.) E. Nathan.
68 Toxic Injury of Parenchymatous Organs in Early Syphilis. (Die parenchymatös-toxischen Wirkungen des Syphiliscontagiums bei visceraler Frühsyphilis und Taboparalyse.) A. Buschke and M. Michael.
69 Antisepsis in Prophylaxis of Epidemic Disease. (Kriegsseuchenbekämpfung durch klinische antiseptische Maasnahmen.) H. Friedenthal.
70 Roentgen Findings with Insufficiency of Ileocecal Valve. E. Marcuse.
71 Improved Technic for Localization of Bullets. (Die Röntgensekundarstrahlenblende als Hilfsmittel für die Lokalisation von Geschossen, demonstriert an zwei Herzschüssen.) G. Bucky.
72 Severe Roentgen-Ray Burn after Gynecologic Deep Exposures. (Fall von schwerer Röntgenverbrennung nach gynäkologischer Tiefenbestrahlung.) G. Bucky.
73 Psychopathology in Dostojewski's Novel. (Die Brüder Karamasow.) A. Münzer.

December 28, No. 52, pp. 1953-1968

74 Bilateral Asymmetry of the Human Body. F. Wachsner.
75 Wrist Watch Driven into Arm by Bullet. (Verwundungen durch indirekte Projektile.) E. Melchior.
76 *Symptoms of Intoxication after Prophylactic Injection of Antitetanus Serum. F. Boenheim.
77 Apparatus to Measure Amount of Blood in the Living Body. (Zur Bestimmung der Blutmenge im lebenden Organismus.) J. Plesch.
78 *Staphylococcus Sepsis with Aplastic Anemia Following Gonorrhea. A. Buschke and H. Hirschfeld.
79 Combination of Multiple Sclerosis with Poliomyelitis? E. Loewy.
80 *Diagnosis of Appendicitis. C. ten Horn.

76. **Intoxication After Antitetanus Serum.** — Boenheim injected in prophylaxis subcutaneously 3⅓ c.c. of the serum, representing 20 units. There was considerable itching at the spot, and this increased until at the end of the week the pruritus over the entire body became so intolerable that the man had to be given morphin. There was also urticaria; the pulse was small, the temperature subfebrile, and there was at one time a brief syncope and attack of weakness. The morning after the morphin had been given (0.04 gm. in the course of the day) the pruritus disappeared entirely, but severe pains developed then in the bones and muscles and there was great weakness. The symptoms improved in the next four days till nothing was left but weakness in the muscles of the calves. A marked but not durable subsidence of the pruritus was noticed after the bowels had moved freely, a hint to be utilized in treatment of toxic pruritus.

78. **Sepsis Following Gonorrhea.**—The man developed multiple joint trouble soon after acquiring gonorrhea, and then staphylococcus sepsis developed, fatal in less than three months after the venereal infection. Necropsy revealed acute nephritis, an abscess in the right lung, the marrow in the long bones yellow and containing staphylococcus. The blood was of the severest aplastic type.

80. **Early Diagnosis of Appendicitis.**—Ten Horn reiterates his former assertions in regard to the diagnostic importance of pain in the region of the diseased appendix when the right spermatic cord is pulled. If the appendix is much diseased, traction on the left cord also may elicit pain. (See abstract in THE JOURNAL, Nov. 21, 1914, p. 1887.)

Deutsche medizinische Wochenschrift, Berlin

December 17, XL, No. 51, pp. 2085-2116

81 Nervous and Mental Disease in the Active Army. (Psychosen und Neurosen in der Armee während des Krieges.) E. Meyer.
82 *Differentiation and Treatment of Gas Phlegmons. M. Busch.
83 Certificates Given by Medical Officers. (Die gutachtliche Tätigkeit des Kriegsarztes.) Reckzeh. Commenced in No. 50.
84 *Improved Differential Medium for Acid-Producing Bacteria. L. v. Liebermann and J. Acel.
85 *Premonitory Stages of Diabetes. (Vorstufen des Diabetes.) P. Bergell.
86 Radium in Treatment of Cancer. W. Rupp.
87 Light in Treatment of Suppurating Wounds. (Zur Lichtbehandlung von eitrigen, jauchigen Wunden.) C. Brill.
88 *Operative Treatment of Flat-Foot. (Zur Bewertung der Nicoladonischen Plattfussoperation.) M. F. Rothschild.

December 24, No. 52, pp. 2117-2140

89 Necessity for Compiling and Comparing Data on Tetanus. (Vorschlag für eine Sammelforschung über Tetanus.) F. Stricker.
90 Wounds of the Larger Blood-Vessels. (Schussverletzungen der grossen Gefässe.) A. Kappis.
91 Wounds of the Skull. (Schädelchirurgie im Felde.) E. Erhardt. Commenced in No. 51.
92 *Causes of Respiratory and Heart Failure during General Anesthesia. (Narkosenasphyxie post laparotomiam.) F. Kirstein.
93 Man on Ground Killed by Bullet Missing an Aeroplane. (Seltene Verwendung bei Fliegerbeschiessung.) Marcus.
94 Formaldehyd Prevents Excessive Sweating of the Feet. (Behandlung der Schweissfüsse.) H. Althoff.
95 *Exposure to Sun and Air Aids in Healing of Extensive Suppurating Wounds. (Die Sonnen- und Freiluftbehandlung schwereiternden Wunden.) Backer.

82. **Gas Phlegmon.**—Busch was able to cure a young officer without amputation by cutting out the gas phlegmon into sound tissue early enough to thus do away with the whole process. He was able to diagnose it in time by the difference in the resonance of the sound made in scraping a razor over the region. This not only revealed the gas accumulations below but outlined their limits.

84. **Differential Medium for Acid-Producing Bacteria.**—Liebermann and Acel write from Budapest to extol the superior advantages of milk sugar-agar plates, colored with congo red, for differentiation of colonies of colon and typhoid bacilli, etc. Colon colonies develop black with a light halo. Typhoid colonies are red and generally transparent. They give directions for making the broth-agar medium; to each 100 c.c. of the filtrate they add 1.5 gm. milk sugar and 30 c.c. of a 1 per cent. aqueous solution of congo red.

85. **Signs of a Predisposition to Diabetes.**—Bergell summarizes twenty-six cases with a positive response to the test he describes and sixteen others with a negative response, the antecedents or the course of the case in each confirming that the reaction occurs only in diabetics, even although the diabetes is so mild at this stage that its presence would not be suspected otherwise. The test is applied to the urine diluted to a constant specific gravity of 1.012; then 7 c.c. of a 15 per cent. solution of sodium hydroxid is shaken up once with 20 c.c. of the urine. Then he adds 3 c.c. of a solution of copper sulphate (138.78 gm. $CuSO_4$ to the liter of water), and the whole vigorously shaken for ten seconds. It is then poured through a coarse filter; the first 2 c.c. are thrown away and the fluid that filters through in the next six minutes is collected in test-tubes of a certain size.

In the healthy the fluid is only very little discolored, but in the diabetic and in those who develop diabetes later there is a pronounced blue tint to the fluid. The reaction was positive in 80 per cent. of the children of diabetics. He presents arguments to show that the reaction is connected with carbohydrate metabolism, and when this is deranged the reaction is positive. As the carbohydrate metabolism returns to clinically normal, as in the case of diabetics under successful treatment, the reaction veers to negative. Even in the healthy, ingestion of 30 gm. grape sugar is followed by a transient positive reaction. He regards this test as of great prophylactic importance. When the reaction is pronounced, it permits the recognition of conditions premonitory of diabetes which demand treatment as for mild diabetes, and thus true diabetes later can be warded off. An inherited taint should call for special care in this respect, aiming to keep the reaction always negative or only feebly positive.

88. **Severing the Achilles Tendon in Treatment of Flat-Foot.**—Rothschild comments on the general lack of appreciation of Nicoladoni's method of treating flat-foot. It has given him most excellent results in the eleven cases in which he has applied it, as he describes in detail. The operation aims to exclude the action of the gastrocnemius and soleus muscles for a time and thus allow free play to their antagonists, the short muscles of the sole of the foot, to restore the arch by their unchecked contraction. To accomplish this, he severs the tendo Achillis, stair-fashion, and turns back the ends, up and down, suturing them to fascia temporarily, and restoring them to place later when the arch has been pulled into shape by the other muscles. Rothschild adds that the operation is extremely simple and that the tendo Achillis regenerates spontaneously, so that there is no need for the second intervention.

92. **Dangerous Reflex Action at Laparotomies.**—Kirstein here adds a fourth case to the three he has previously published in which cessation of the manipulation of the peritoneum during a laparotomy arrested the respiration and heart beat. By rhythmical pounding with the fist on the heart region, without artificial respiration, the heart was started to beating anew and the danger was past. This patient was a delicate woman with ruptured tubal pregnancy, and the collapse came as the peritoneum was left in peace after having been rather roughly handled during the operation. He theorizes that the amount of anesthetic required depends on the intensity of the irritation from the operative procedures, a certain amount of anesthetic balancing a certain amount of irritation. If this irritation stops suddenly the anesthetic then makes its influence felt more on the general system, so that it slides into the danger phase. In this case the narcosis-asphyxia came on suddenly when the operator had finished with his investigation and manipulation of the peritoneum.

95. **Light and Air in Treatment of Suppurating Wounds.**—Backer practices in a mountain region and has been much impressed with the comparatively rapid healing of extensive suppurating processes left exposed to the light and air. He urges the application of the principle to shell wounds, etc. The hyperemia induced by the sunshine is an important factor in the result, and he found that this was enhanced when the plaster cast or dressings were painted black with water colors or covered with black flannel. He leaves the wound exposed to the air even when the sun is not shining. The dry mountain air keeps it dry, and he lifts up the thick fibrin eschar at various points every five or six hours to let the air in and set the tissues to working again. This can be done best by drizzling with hydrogen dioxid. He begins with fifteen-minute exposures to the sunlight, and gradually increases to an hour or two, until finally the wound is thus exposed three or four hours in the winter and six or seven in the summer, wheeling the couch into the shade during intervals. The exposures are graded carefully to avoid damage from sun-burn.

Medizinische Klinik, Berlin

December 20, X, No. 51, pp. 1811-1838

96 Diagnosis and Treatment of Small-Pox. (Pocken.) G. Jochmann, Concluded in No. 52.

97 Surgical Experiences in Field Hospital. (Kriegschirurgische Erfahrungen im Feldlazarett.) O. Nordmann. Concluded in No. 52.

98 Wounds of the Eyes. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam. Continued.

99 Surgical Experiences at Base Hospital. (Technisches und Therapeutisches aus dem Reservelazarett zu Limburg.) H. Hans.

100 The Food Supply in Germany. (Ernährung in der Kriegszeit.) K. Brandenburg.

December 27, No. 52, pp. 1839-1852

101 Recovery from Tetanus under Serotherapy; Three Cases. R. Wichmann.

102 *Early Diagnosis of Tabes Dorsalis. C. Behr. Commenced in No. 51.

103 Sterilization of Wounds. (Zur Wundbehandlung.) F. Krauss.

102. **Early Diagnosis of Tabes.**—Behr remarks that the limits between the normal and the pathologic in the central nervous system are revealed more accurately and sharply by the ophthalmoscope than by general neurologic examination of the patient. Especially with tabes, the eye findings may show the pathologic condition years before it becomes manifest in any other way. Since the recognition of the fact that tabes is the direct consequence of treponema infection, it is imperatively necessary to detect it and apply treatment before irreparable lesions are installed, and he insists that ophthalmologic examination is the simple and reliable means to this end. It is possible in this way to discover the first tendency to loss of reflex contraction of the iris in response to light. This reflex does not become entirely impaired at once, but only part of the iris at first fails to contract. As the rest of the iris contracts, there is a little bay at this point. Any irregularity in the circumference of the iris as it contracts warns of beginning impairment of the light reflex if there is relative miosis and the contraction of accommodation proceeds normally. By this means we can diagnose incipient tabes with certainty when only a comparatively small number of the cells and fibers involved are affected. This irregularity in the reflex contraction is never observed in normal conditions; the contraction is always strictly concentric. The irregularity cannot be seen with the naked eye; it has to be magnified.

Tabetic atrophy of the optic nerve is simple, with merely contraction of the arteries. Any tendency to optic neuritis testifies against tabes. The atrophy does not develop until the tabes is well under way, but impairment of the adaptation

to darkness occurs very early in tabes. This can be shown readily by an apparatus that determines the smallest amount of light which the eye is able to recognize as light. The more minute this is, the more sensitive the retina. The patient passes from the daylight into a dark room and, at five-minute intervals, with the adaptometer, the smallest amount of light which the subject is able to perceive is measured. In tabes, even in the incipient stages, the curve of perception of light after fifty minutes is less than the curve under normal conditions in ten minutes. The normal curve is an even rise from 500 to over 4,000 in forty-five minutes, while in tabes 500 is never reached. Behr theorizes to explain the mechanism of this, reiterating that this impairment of the adaptation of the eye to darkness is of constant occurrence with tabetic atrophy of the optic nerve, and it can be detected long before the vision, perception of colors or visual field show anything wrong.

He assumes that the atrophy of the optic nerve is the direct consequence of some circumscribed focus of treponema invasion close to the optic nerve. The toxins generated in this focus destroy the fibers of the nerve and the degeneration slowly extends down to the papilla, where it is shown up by the ophthalmoscope. The impairment of adaptation to darkness long precedes the spread of the degeneration to the papilla; the ophthalmoscope findings may still be normal. In studying this subject, Behr examined for the darkness adaptation all the patients in the medical clinic (Kiel) during the last four years, and in 107 of the total 30,000 the adaptation to darkness was defective. In 3 of the 107 the ophthalmoscopic findings were otherwise entirely normal, but in the course of a year or so, the blanching of the papilla revealed the encroaching atrophy. The constancy of this impairment of adaptation to darkness, its occurrence in the incipient stages of tabes, and the ease with which it can be detected with a Nagel or Piper adaptometer give us the key to the early diagnosis of tabes, and hence the possibility of arresting it before serious damage is done.

Münchener medizinische Wochenschrift, Munich

December 15, LXI, No. 50, pp. 2365-2400

104 The Finer Structure of the Kidney. (Der feinere Bau der Niere.) K. Peter.
105 Bile Pigment Derivatives in Echinococcus Liver Cyst. (Ein seltener Sputumbefund bei einem in die Lunge durchgebrochenen Leberechinokokkus.) E. Maliwa.
106 Ultraviolet Rays Arrest Senile Gangrene. (Behandlung eines Falles seniler Gangrän mit ultravioletten Strahlen.) A. Kriser.
107 Balneotherapy at Home for Gynecologic Trouble. (Hauskuren mit Krankenheiler Lauge.) I. Democh-Maurmeier.
108 Uniform and Numbered History Cards to be Given Surgical Patients on Dismissal. (Krankengeschichtliche Merkkarten.) V. L. Neumayer.
109 Emergency Subcutaneous Suture of the Patella with Catgut. (Katgut-Patellarnaht im Felde.) B. Riedel.
110 Cardiovascular Disease in the Active Army. (Die Krankheiten der Kreislauforgane und der Krieg.) J. A. Grober.
111 Artificial Heliotherapy of Wounds in War. (Die künstliche Höhensonne im Dienste des Kriegslazaretts.) F. Thedering.
112 Hypertonic Saline Infusion in Cholera; Forty Cases. E. Prasek.
113 Improvised Set of Apparatus for Therapeutic Exercises. (Eine improvisierte medico-mechanische Anstalt.) A. Veith.
114 The Water Supply at Antwerp after Water Works were Destroyed. Fürth.

December 22, No. 51, pp. 2401-2432

115 Vaginal Operations under Local Anesthesia. (Erfahrungen an den 22 ersten Fällen von vaginalen Operationen in parametraner Leitungsanästhesie.) E. Ruge.
116 Chronic Arthritis; Causes, Classification and Principles for Treatment. W. His. Commenced in No. 50.
117 Serotherapy Plus Narcotics in Tetanus. (Die kombinierte Antitoxinüberschwemmungs- und Narkosetherapie des Tetanus.) G. L. Dreyfus and W. Unger.
118 Wounds of the Skull. (Zur Prognose und Behandlung der Schädelschüsse.) Hancken.
119 Means to Correct Stiff Joints. (Mobilisation versteifter Gelenke.) Schede.
120 After-Treatment of Wounds of Joints, Especially of the Shoulder. (Nachbehandlung von Gelenkschüssen, bes. des Schultergelenks.) F. J. Kaiser.
121 Prevention of Venereal Disease and Vermin. (Praktische Winke zur Verhütung und Bekämpfung der Geschlechtskrankheiten und von Ungeziefer im Felde.) F. Lesser.
122 Life and Accident Insurance and the War. (Die durch den Krieg auf dem Gebiete des Versicherungswesens geschaffenen Aenderungen.) Reckzeh.

Therapeutische Monatshefte, Berlin

December, XXVIII, No. 12, pp. 717-764

123 Progress in Recent Years in Treatment of Liver, Bile-Duct and Pancreas Diseases. (Fortschritte in der Behandlung der Leber-Gallen- und Pankreaskrankheiten.) H. Hochhaus.
124 Principles of Psychotherapy. A. Gregor.
125 Prophylaxis and Treatment of Cholera. O. Hartoch.
126 Copper Salts Not Found Effectual in Tuberculosis. (Unsere Erfahrungen über das "Finklersche Heilverfahren" bei der Tuberkulose.) Kaiser (Marburg).

Wiener klinische Wochenschrift, Vienna

December 17, XXVII, No. 51, pp. 1609-1632

127 Localization of Scraps of Metal in the Body. (Genaue Ortsbestimmung von Geschossen und anderen Metallteilen im Körper mittels Röntgenaufnahme.) W. Trendelenburg.

December 24, No. 52, pp. 1633-1658

128 *Tetanus. L. Arzt.
129 Prophylaxis and Treatment of Freezing Injuries. (Erfrierungen.) E. Pribram.
130 Prophylaxis of Skin and Venereal Diseases in the Army. (Vorschläge betreffend die Bekämpfung der venerischen und einiger parasitärer Hauterkrankungen im Heere.) O. Sachs.
131 Experience in Field Hospital. (Kriegschirurgische Betrachtungen.) H. Hinterstoisser.

128. **Tetanus at Cracow.**—Arzt says that in the sixty-five cases of tetanus among the 26,600 wounded in hospitals at Cracow, only eleven of the tetanus patients recovered, and all of these had been given antitetanus serum. Forty-six others had been given the antitetanus serum also among those who died from it. This proportion of only 0.24 per cent. cases of tetanus among the wounded he ascribes to the fact that the fighting was on wild land, not cultivated, in contrast to conditions at the western seat of war. One patient who developed tetanus the third day and was given 260 c.c. of serum recovered, as also one man shot in the thigh four days before the tetanus came on; 120 c.c. of the antitetanus serum was injected the fourth day and more later to a total of 270 c.c. The incubation period in the other cases of recovery was from six to nineteen days.

Zeitschrift für Urologie, Berlin

November, VIII, No. 11, pp. 779-818

132 *Concrements in the Prostate. F. Suter.
133 *Intermittent Irritation of the Bladder from Retroflexion of the Uterus. D. Teleky.
134 Polyvalent Diplococcus Vaccine in Treatment of Gonococcus Infection in Male and Female. Perez-Grande.

132. **Concrements in the Prostate.**—Suter writes from Basel to report his success in clearing out ten concrements in the prostate. A guide catheter was introduced through a minute slit in the perineum, and on this the urethra was slit enough to permit the removal of the concrements after they had been seen with the Roentgen rays. Palpation through the rectum revealed that the hard prostate softened up after a few of the concrements had been removed so that the others could be easily felt. After rapid recovery from this operation, the left kidney was removed, as it contained stones, and there was a paranephritic abscess at the upper pole, and tests showed that this kidney was not functioning at all. The patient was a man of 54, and he had had trouble in the prostate ever since he had acquired gonorrhea thirty years before. During the last three years there had been symptoms from the left kidney and a large stone had been removed from it, leaving a fistula which had refused to heal. All the concrements were made up of phosphates, no urates or oxalates, and they lay in strikingly symmetrical arrangement. In another case of stones in the prostate, Suter, supposing they were in the bladder, tried to remove them through a suprapubic incision, but found this impossible. He opened then the bladder-membranous part of the urethra and easily cleared out the stones. He was impressed in both cases with the ample oversight afforded; the interior of the prostate can be examined with the finger introduced through the button-hole incision. The urethra also healed rapidly and smoothly without any obstruction in the lumen.

133. **Intermittent Irritable Bladder.**—In Teleky's cases the symptoms of irritable bladder in a severe form developed suddenly and subsided in the same way, the attacks recurring at intervals. The recurrence was always just before the

menses, and the women with this intermittent nervous bladder trouble all had retroflexion of the uterus. The disturbances from this premenstrual irritable condition were more pronounced with congenital retroflexion in women who had never borne children than with acquired (puerperal) retroflexion. The cystoscopic findings are characteristic, especially protrusion and notable congestion of the trigonum or actual inflammation in and around the trigonum, the mucosa in the trigonum region thrown up in folds, sometime edematous. The bladder mucosa elsewhere is of normal aspect. In every case of repeated attacks of irritable bladder the connection with menstruation should be investigated and the position of the uterus. He thinks that mechanical factors are responsible for the trouble in question.

Zentralblatt für Gynäkologie, Leipzig

December 19, XXXVIII, No. 51, pp. 1497-1512

135 No Internal Secretion of Uterine Mucosa Demonstrated as Yet. (Zur Frage der inneren Sekretion der Uterusschleimhaut.) S. Aschheim.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 24, XXXV, No. 137, pp. 3017-3032

136 Hemorrhagic Diathesis in Typhoid. (Sindromi emorragiche del tifo.) L. Cecconi.

137 Septicemia and Kidney Complications in Typhoid. E. Maragliano.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 13, pp. 805-884

138 Modern Superstitions; the Forked Hazel. (Hedendaagsch Mirakelgeloof. IX.) G. van Rijnberk. Continued.

139 The Luetin Skin Reaction in Syphilis in Adults and Children. L. K. Wolff, W. P. C. Zeeman and J. C. Schippers.

No. 14, pp. 885-960

140 Orthostatic Albuminuria. M. H. J. Groenendijk.

No. 15, pp. 961-1044

141 Appendicitis in India. A. E. Sitsen.

142 Mechanism and Differential Importance of Conjugated Deviation of the Eyes. L. J. J. Muskens. Commenced in No. 14.

143 Epidemic Poliomyelitis in Young Children. P. B. Westerhuis.

Russky Vrach, Petrograd

XIII, No. 28, pp. 965-996

144 *A Peculiar Form of Myoclonia. N. M. Popoff.

145 New Attempts in the Treatment of Deafness. M. V. B. Berezovsky.

146 *Pernicious Anemia. G. P. Chosroeff. Commenced in No. 26.

147 *Systolic and Diastolic Pressure in Nephritis. I. S. Schwarzman.

148 *Treatment of Congenital Hemophilia. S. I. Liokumovich.

149 Malaria in Turkestan. V. L. Yakimoff and N. I. Schochor.

150 *The Clinical Value of Vital Staining of the Granules of the Red Blood Corpuscles. B. Melkich.

144. **Myoclonia.**—Popoff describes a peculiar form of myoclonia which he proposes to call myotonoclonia, as in his case there was a combination of both tonic and clonic muscular contractions. The patient was 19 years old and the trouble began six years before with clonic contractions of the left wrist during voluntary movements. Later on the muscular contractions affected the fingers. Three years afterward tonic muscular contractions developed in the forearm muscles, followed by clonic and tonic contractions in the muscles of the neck, and finally in the flexor muscles of the trunk. The contractures would last for two months and then disappear and return later. The mind was not affected, and no signs of an organic lesion of the central nervous system could be discovered. The patient was drawn over far forward and also showed a tremor, which increased on attempts to straighten up the body. During sleep, lying or sitting, the rigidity and tremor disappeared. The father and a younger brother also showed similar myoclonic disturbances, though without the involvement of the abdominal muscles.

146. **Pernicious Anemia.**—Chosroeff has had thirty-five cases of pernicious anemia without known cause under his care during the last three years. Ten of the cases were studied for many months, with necropsy in three. He differentiates three clinical forms: the chronic intermittent or recurrent form of Türk, the acute form and the aplastic type, with numerous transitional forms. He tried almost every possible method proposed for the treatment of this disease, including drugs, arsenic, iron, hydrochloric acid, etc., dietetic-vegetable diet, then gastric juice, pancreas extract, blood transfusion, splenectomy, etc. His conclusion is that there is no specific remedy for pernicious anemia, but that spontaneous remissions are quite common and frequent, especially when the patient is no longer young. A method of treatment begun at the time of a beginning remission or when a relapse has reached its end, will give good results, but when used in the beginning of a relapse there is no measure that will prove effectual. These relapses and intermissions have thus nothing to do with the method of treatment. The older the patients, the better they bear the relapses, the younger ones usually succumbing during the first or second relapse.

147. **The Blood Pressure in Nephritis.**—In 100 cases of various forms of nephritis, Schwarzman found that the pressure during both systole and diastole was increased in uremic and in acute parenchymatous, interstitial and combined forms of nephritis, the increased blood pressure being not the result, but the cause of the cardiac hypertrophy. The systolic and diastolic pressure may be increased long before any other signs of nephritis, such as urinary changes, etc. The high pressure thus forms a reliable and early sign of nephritis. The increased blood pressure with nephritis differs from that with cardiac neuroses by being continuous, and by the diastolic pressure being higher than in cardiac or vascular neuroses, with which he never found the pressure over 120 or 130 cm. water (Recklinghaus). With the aggravation of the nephritic process, the systolic pressure sinks because of diminished heart activity and of the increased diastolic pressure. The fall of both pressures, occasionally observed in nephritis, is caused by paresis of the vasoconstrictors and failing cardiac power.

150. **Vital Staining of Blood Corpuscles.**—Melkich claims that the granules in the red blood-cells are not due to fixation of the specimen, but indicate merely young normal erythrocytes. Increased numbers of granular erythrocytes indicate an exaggerated but a normal activity of the bone marrow. This is found in all those processes that are connected with increased destruction of red blood cells which decrease in number. The granular erythrocytes greatly decrease in amount, or even entirely disappear, in diseases of the bone marrow, and probably also with malignant tumors.

Hygiea, Stockholm

LXXVI, No. 23, pp. 1313-1360

151 *Rupture of the Rectum. (Ett fall av ruptura recti jämte några ord om de s. k. spontana rektalrupturerna.) N. Hellström.

151. **Spontaneous Rupture of the Rectum.**—Analysis of the cases of so-called spontaneous rupture of the rectum has convinced Hellström that the rectal wall was not normal at the point of the rupture. He reviews and compares a number of cases from the literature, only one of the patients recovering; the others succumbed to the consecutive peritonitis. The patient who recovered was a youth of 17, previously healthy until he experienced severe pain at defecation one day, with some bleeding. The operation half a day later revealed a protrusion suggesting a diverticulum, and a rupture above, with diffuse peritonitis. An artificial anus was made to allow the sutured rectal wall to heal, and there was no further trouble. Hellström then relates a fatal case from his own experience; a man of 63 was roused from sleep at night by intense pain in the rectum. The operation ten hours later showed a rupture with smooth edges and no blood in or around it. There was no history of trauma.

Ugeskrift for Læger, Copenhagen

November 12, LXXVI, No. 46, pp. 1971-2006

152 Hermaphrodites from Standpoint of Legal Medicine. (Den retsmedicinske Bedømmelse af Hermafroditerne.) V. Ellermann.

December 24, No. 52, pp. 2177-2214

153 *Traumatic Neuroses; II: Traumatic Hysteria, Neurasthenia, Simulation, and Indemnities. (Om traumatiske Neuroser og deres senere Forløb samt om deres Forhold til Erstatningspørgsmaalet.) A. V. Neel. Concluded from No. 51.

153. **Traumatic Neuroses.**—The first installment of this article was reviewed in these columns January 30, page 476.